PACKAGE engineering

Practical experience with quality control

From the viewpoint of operating management an expert who has been through the mill candidly reviews some important points to heed and some significant pitfalls to avoid in starting and maintaining a quality control program. (See Page 7)

Installing high-speed packaging machinery

When a new and high-speed wrapper goes into an existing packaging line a number of incidental problems (such as supplying of product to keep up with the machine, as well as proper take-away of finished work) have to be solved. (See Page 11)

Flexible packaging material performance

Developing performance requirements for flexible packaging materials rests on adequate testing (before and after packaging) and on thorough understanding of product properties and compatibility with materials. (See Page 14)

Complete table of contents on Page 2

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A look ahead

Next month we shall present a thorough-going article by Laurence V. Burton, our consulting editor, in which he examines the problem of permissible variations in net weights. His article is not only predicated on his own penetrating analysis of the federal regulations but also upon detailed discussion with the federal authorities in Washington. No one concerned with overfill and underfill can afford to miss this article.

Another article coming up is one dealing with the taping of the top flaps of cases without disrupting the normal case sealing operation. Blatz Brewing Company, after much experimentation, is now installing a production model of a new taping unit that fits in with the case sealer—so that sealing and taping may be done interchangeably. This article also examines some problems involved in case taping, such as the use of brushes versus rollers, and the importance of uniform water pressure as delivered to the taping unit.

Soon to appear is an ingenious method of delivering the production (i. e., individual cartons) of three wrapping machines to a banding operation requiring a delivery of five packages at a time. Vick Chemical Company worked this out for its cough drop operation: Its engineers not only found a way to put the production from three wrappers into a row five packages wide, but also came up with a means of preventing packages from a succeeding wrapper from dropping onto those from the preceding wrapper.

As noted elsewhere in this issue, the Society of Industrial Packaging and Materials Handling Engineers is holding its annual exposition, competition and short course in Kiel Auditorium, St. Louis, October 22-25. The program, especially of the short course, offers a valuable educational opportunity. —R. B. H.

OCTOBER 1956 • VOLUME 1 • NUMBER 10

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

Contents

7 **Quality control—when, where, and how,** by Paul K. Leatherman, Mallinckrodt Chemical Works
A practical guide to starting and maintaining a quality control program—based on the experiences of one who has hurdled many obstacles in furthering the work of quality control.

11 **Fitting high-speed machinery into an existing line**
When Verifine Dairy Products Company installed a new Italian-made wrapper it found a whole new set of problems of accelerated supply and take-away which it had to solve—to keep up with its wrapping operation.

14 **Determining performance requirements of flexible packaging materials,** by Robert N. Johnson, manager, quality control, Cincinnati Manufacturing, The Kroger Company
An unusually broad experience in material selection and product and package testing provides a background on which to base some significant observations—including an enumeration of problems solved.

18 **Highlights of the 18th Annual Forum of Packaging Institute**
An interpretative report covering some of the material presented of special interest to those concerned with technical and operational packaging—designed for the special benefit of those unable to attend the forum.

24 **Changing the package of a military aircraft component,** by Armond A. Fratello, traffic manager, Sundstrand Aviation, Division of Sundstrand Machine Tool Company
Proving that those responsible for military packaging requirements readily modify their requirements when a user shows that he has an even better package than an already satisfactory one.

28 **Announcements of machinery and products**

32 **Industry literature available free**

36 **SIPMHE announces its exposition, competition and annual short course**
The Society of Industrial Packaging and Materials Handling Engineers has a short course that includes not only technical material but also broad gauge material contributing to the executive development of the technical specialist.

39 **Classified advertising**

40 **What we think** (our editorial page)

Reader service card inside back cover

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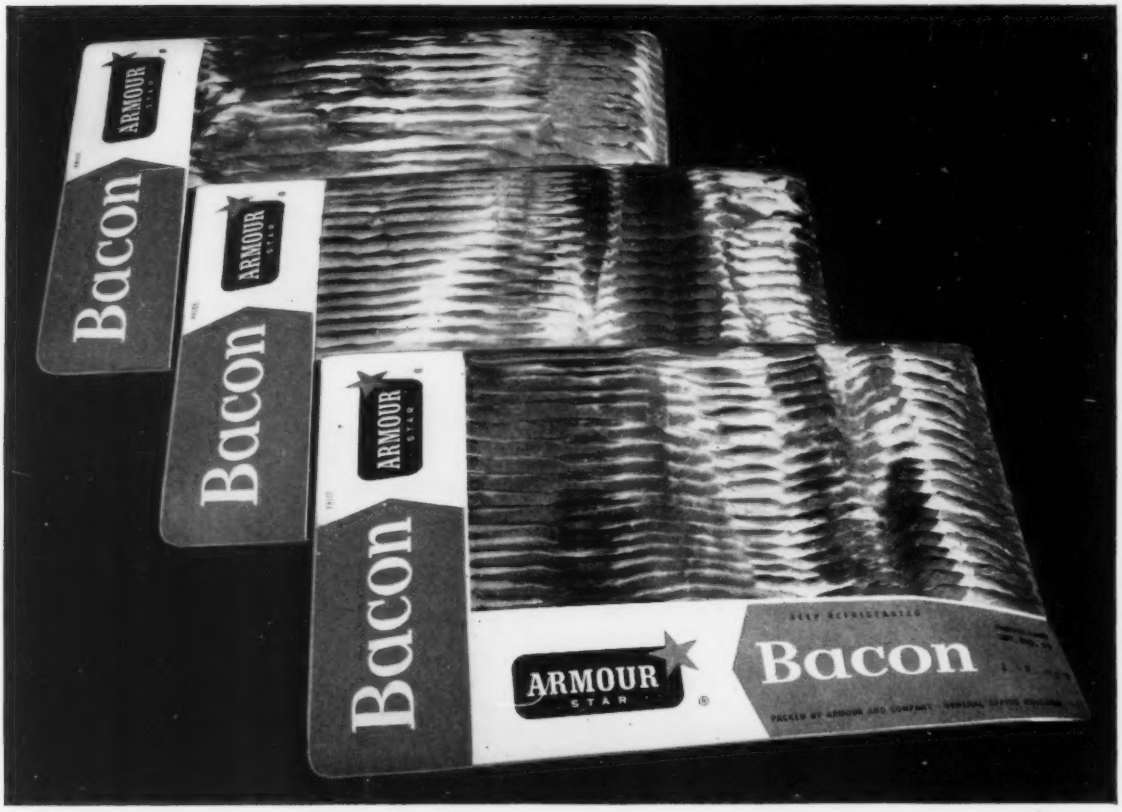

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A note from the Publisher

In the last 20 years I have attended many conventions, and each year one of the most informative I attend is the Packaging Institute. The men on the various panels are authorities in the field, speaking on subjects of current interest. The question and answer periods at the end of each session give every one there a chance to query the speakers and, frequently, other men in the audience. The opportunity to rub elbows with other men in your profession and talk over mutual packaging problems is something no one can afford to miss.

The 1956 annual forum of the Packaging Institute just concluded was no exception, and it was a meeting well worth attending. While the attendance appeared to be somewhat less than in 1955 in New York, this is understandable since I don't think there was the large group of one-day registrants in Cleveland to match the men who come into the New York meetings from New Jersey. The program was excellent. Any company that is sufficiently interested in packaging to be reading PACKAGE ENGINEERING should send one or more of their key packaging men to these annual meetings. If you can't take in the complete sessions next year, you should at least plan on attending on those days when the subjects are of particular interest to you.

At the annual banquet it was announced that the Packaging Institute is going to sponsor two annual awards for outstanding contributions to packaging technology. To quote in part from the announcement: "Alone among other associations and groups that serve the industry, the Institute, following the concepts of its founders, has succeeded in providing both the means and the opportunity for technically minded people to work together to improve and extend the horizons of Packaging Technology and to give wider recognition to the professional status of the Packaging Technologist. . . .Accordingly the directors of the Packaging Institute have authorized the establishment of two annual awards, the first presentation of which shall be made at the 1957 Forum."

One of these awards is to be a corporate award given annually in recognition of an outstanding advance in applied packaging technology in that company which has commercially integrated packaging materials, equipment and methods in the packaging of its product.

The other award is the Professional Award of the Packaging Institute which is to be presented annually to the individual who, because of his preeminence in, and contribution to, the field of packaging technology is deemed worthy of special recognition.

It was pointed out that these corporate or personal contributions did not necessarily have to be made in the last 12 months, but could be any contribution to the field.

The Packaging Institute has prepared a booklet on these awards as well as an Official Award Nomination Form obtainable from the executive office of the institute at 342 Madison Avenue, New York 17, N.Y.

I think these awards will do much to spotlight the contributions that men engaged in the package engineering function make to their companies' profits as well as the nation's economy. These awards will raise more packaging men into staff level jobs by publicizing the contributions to general management.

Angus J. Ray
Publisher

PACKAGE engineering

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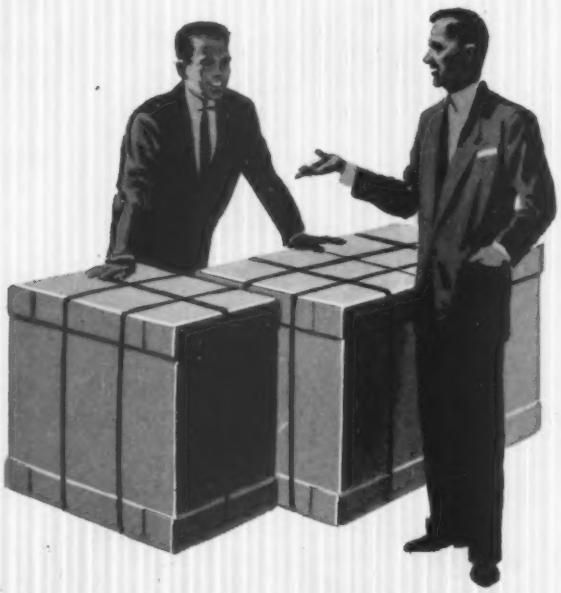

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Paul K. Leatherman is a graduate of Gettysburg College and Johns Hopkins University. He began his industrial career in 1931 as a research chemist for the Emerson Drug Company, and later served as chief chemist for the Maryland Racing Commission. In 1947 he accepted a position as manager of quality control for the Lambert Pharmacal Company. In 1954, became director of quality control for the Falstaff Brewing Corporation. Currently he is with the Uranium Division of the Mallinckrodt Chemical Works. Dr Leatherman is a member of the American Chemical Society (a Past Chairman of the St. Louis Section), American Society for Quality Control and currently an Executive Director of the American Society for Quality Control.

Much has been said and written about the technical points of statistical quality control but relatively little has appeared as a practical guide to just how to go about establishing such a program. This article, a reflection of the author's broad experience in this field, reviews a number of practical steps entailed in starting—and enumerates some significant precautions to follow in maintaining the program.

Quality control —when, where, and how

By Paul K. Leatherman,
Mallinckrodt Chemical Works, St. Louis

Mr. Top Executive: Let's direct this discussion to you and let's make it essentially a question-and-answer story. In recent years you have asked the question: When, where and how do we start a quality control program? The main discussion herein will be on the "where" and "how". As to "when" — only you can decide.

You can't *inspect* quality into your product; you must *build* quality into your product. How well the author remembers one afternoon, in a round table discussion, a statement made by a vice president: "Let's have more inspection and less statistics". This statement was made a few months after a quality control department was inaugurated, and the simple $\bar{x}$ (read "X bar") charts were showing that the process was out of statistical control. Very little analyzed data were needed to point out the situation.

Just as long as you continue to inspect your final product, and think you have quality control, you are certainly laboring under a false impression. All final inspection will do is tell you where you *were*. It does not correct the mistake, and it will not tell you where you *are going*. A control chart will tell you where you are, and where you are going. It also tells you with what assurance.

Where Program Starts

Now, where do we start our control program? At the back door. Your receiving department. Let's call it receiving inspection. Without the proper packaging materials coming into your plant, how can you produce a good-looking package? Now, doesn't this suggest another problem? Sure. You need a specification!

What is a specification? (1) (2) Is it a group of figures, a conglomerate mass of fancy-sounding words, a lengthy dissertation? Not so. The ideal specification should be concise and to the point, made in outline form, using meaningful, simple statements of fact. See Figure 1 for a starter. Or, we can get into more detail as shown in Figure 2. Don't ask for tolerances you don't need; it will up your cost.

However, once you have established your needs, write your sampling plan accordingly. Let your supplier know what you are doing. Meet on a common ground and discuss your problems. Remember, a major defect for you may be a minor one for the vendor, and also your idea of a minor defect may be a major one to your supplier.

Remember, too, you can't produce all items 100 per cent perfect. You can't write your own name five times in succession and have them identical. Therefore, set your limits of tolerances so that they are economically sound. It may be to your advantage to have a few rejects and throw them away, rather than have your vendor's limit so tight that he must increase his inspection cost.

FIGURE 1

Specification No. _____
Date 6/1/56 — Page 1
Supersedes Page 1
Dated 1/2/56

THE K. P. CHEMICAL CO.
ROADSIDE, U.S.A.

1. General — Description
   1.1. (Statement of the Product)
2. Detail Requirements
   2.1. Grade
   2.2. Dimensions
   2.3. Workmanship
   2.4. Symbol
3. Packing
   3.1. Types, etc.
4. Sampling
   4.1. For Workmanship
   4.2. For Dimensions
5. Distribution of Results
   5.1. Quality Control Department File
   5.2. Purchasing Department
   5.3. Production Department.

Then, once you have established your mutual understandings, your sampling plan will tell you how well your vendor is living up to his agreement. It will also allow you to study and rank your vendor's performance.

Sampling For Inspection

Let's talk about sampling just a bit. In your specifications, spell out the plan you will use. State the minimum number of defects you desire, and the maximum number that will cause you line-production trouble. Also state the risk you will assume in accepting a greater number of defects per shipment. Again, let your vendor know what you are doing. It will eventually cause you trouble if you don't. If you have a good vendor you'll be ahead if you use a double sampling plan. It will require less sampling by you and less inspection time. It also gives your supplier a second chance, and you will know sooner, whether to accept or reject the lot.

FIGURE 2

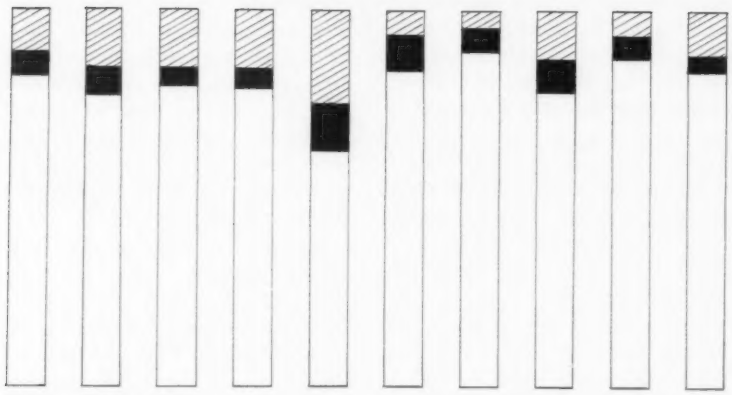
Specification No. _____
Date 6/1/56 — Page 1
Supersedes Page 1
Dated 1/2/56

THE K. P. CHEMICAL CO.
ROADSIDE, U.S.A.

1. General — Description
   1.1. A standard carton with tuck ends
2. Detail Requirements
   2.1. Dimensions
      2.1.1. The dimensions shall be 1-3/14x5/8x4-5/8 ± 1/32
   2.2. Carton Make-up.
      2.2.1. Style A.
         2.2.1.1. The carton shall have direct tucks top and below
      2.2.2. Style B.
         2.2.2.1. The carton shall have reverse tucks.
      2.2.3. Stock
         2.2.3.1. The carton shall be 0.020-0.022 inch clay-coated newsback, varnished or equivalent.
      2.2.4. Squarences
      2.2.5. Excess glue
      2.2.6. Scoring
      2.2.7.End Flaps
   2.3. Standard Copy
      2.3.1. Color of ink
      2.3.2. Standard copy shall be
      2.3.3. Size of print
      2.3.4. Copy location
3. Packing (Shipping Container)
   3.1. In uniform layers, packed flat.
   3.2. Each case to show number of cartons per box.
4. Identification.
   4.1. Each case to show number of cartons
   4.2. Each case to show manufacturer's lot number
   4.3. Each case to be held until approved for use
5. Storage.
   5.1. Ideal storage conditions are . . .
6. Sampling.
   6.1. Sampling plan for workmanship, color, etc.
   6.2. Sampling plan for dimensions.
7. Methods for testing.
   7.1. (Details of checking for 2 above)
8. Distribution of Results.
   8.1. Quality Control Department files.
   8.2. Purchasing Department
   8.3. Production Department
9. Approved Sources (For your Purchasing Agent)
   9.1. A.B.C. Company

FIGURE 3.

Each bar represents an 8-hour day.
Top of graph, 100% Capacity
Shaded area — down time
Dark area — rejects
Light area — completed production



This type of chart is sometimes more easily understood by the Tops than a control chart. This one tells the story on 10 days of production.

Some Costly Education

Take a look at what a small sample revealed to the quality control engineer one day. A shipment of tubes was received, consisting of over a thousand gross. Major and minor flaws in decoration had been set by the company at two and ten per cent levels respectively. The sampling tables of Dodge & Romig (3) were used to determine the sample size — 42 in this case.

Inspection of this small sample revealed that 30 per cent of the tubes had major flaws and defects in the decoration. When the fact was reported to management, no one, except the quality control personnel, would believe the findings. It was said that 42 tubes out of 144,000 were not representative.

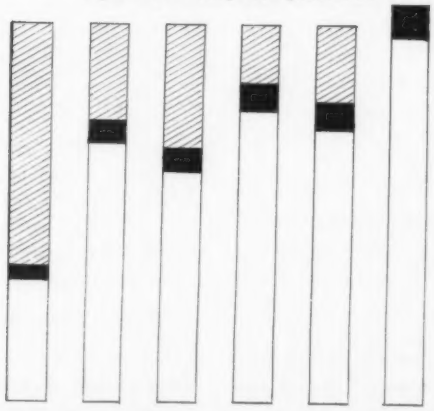
So it was decided by management to inspect 200 gross of tubes; 28,800. What a chore! But it was done. The inspectors were given samples, as inspection guides, and in due time the task completed. Results? The 200 gross revealed 33 per cent defective. Maybe you'll say the quality control department was just lucky.

However, at a subsequent date a similar situation was reported by the quality control department: There were 12 per cent minor and 14 per cent major decoration defects, and once again 100 gross were ordered inspected. The inspection was cut down this time because the shipment was smaller. After the examination, the report showed 14 per cent and 12 per cent, the major and minor defects being reversed. From here on, the quality control department wrote its own ticket on sampling, and management set the standards. Now, why not write your sampling plan into your specifications?

Let the vendor know about the plan. If it can't be met, there are other suppliers — or maybe your standards are too tight. At least, you'll know where you are going.

FIGURE 4.

Each bar represents an 8-hour day.
Top of graph, 100% Capacity
Shaded area — down time
Dark area — rejects
Light area — completed production



Operating results after a 3-week shut-down for vacations. The first day had plenty of troubles that could have been avoided. But what actually happened on that last day? Read the text to find out.)

Where To Start In Plant

The question is often asked: Where do we start in the plant? If you have a quality control man with dreams and imagination, he will see many starting points. A suggested starting point: Right on the packaging line — from the empty bottle to the finished shipping case. As an example of such a start, let's look at Figure 3.

Each bar on the graph represents a day's run on a bottle-wrapping machine, and the top line represents 100 per cent production. The solid area represents the per cent rejects which had to be torn open and rewrapped. The clear area below represents the completed production. Knowing the machine's capability, (100 per cent production), the number of rejects, and the number of finished bottles, by difference you get the downtime (shaded area).

Would you be satisfied with an average of 12.9 per cent downtime? Or better yet, call it non-productive time. And would you be satisfied with 7.1 per cent rejects? In other words, your production line is only 80 per cent efficient. Now take a look at Figure 4. Could you continue to have an average of 61.8 per cent productive machine-time, 32 per cent

downtime and 6.4 per cent rejects to be re-worked? Just a few calculations from these data, and you will have your cost figures. They are rather astounding!

In the case of both Figures 3 and 4, the data were taken from the production records. In Figure 4, you will note that on one day the sum of the rejects and completed production is more than the actual capacity of the machine. And this same condition was encountered on other wrapping machines. Would you like to have your production records so kept?

Figure 4 is the period of time right after a three-week vacation shut-down. The first day shows an excessive amount of adjustment time. Why not have your mechanics iron out these troubles before the vacationers return?

It was shown subsequently that small samples, taken from the production line at various intervals during the day, would predict the per cent rejects with alarming accuracy. However, to get many stories across to management with one graph, the production figures were used. Monthly graphs were presented to management showing the loss of production and the dollar cost of this production loss.

This method of presenting data is very useful in comparing one day's work with another, or to compare short runs.

The quality control man, with vision, forethought and imagination can find untold starting points. Wherever two items are manufactured, statistical quality control is applicable. Locate a trouble spot: Study the problem, and it won't be too long before you will have concrete facts to tell you whether the trouble is with the machine, the operator, or the packaging material.

Do's And Don't's — Mostly Don't's

May we consider a few *do's* and *don't's*, as well as some more illustrations? Don't expect a quality control department to be a cure-all. It is a service unit, a study group, an aid, a modified or specific research group. It is a means to an end. In the beginning, it may cost you a few dollars; in the end you will be dollars ahead.

Don't think that just because you have established a quality control department your troubles are over. It takes time — and study. The American Society for Quality Control is just ten years old but has almost 10,000 members. Do you know of any other scientific or professional society with such a rapid growth? Was business built in a few days, weeks or months? Give the quality control group enough time to prove itself. Its members will amaze you with their findings.

Don't discard the program just because the results don't suit your fancy. The quality control group is a fact-finding, trouble-hunting, and recommending group. Listen to its story, study its analyses and proposals. One executive said of a quality control program: "This is a long-range venture. We are building for the future." Yet, in less than 18 months the department was discontinued! What did the quality control group do for the company in that time?

First, an evaluation and study was made of a group of vendors; it showed who was best by ranking them in statistical order.

Second, a laboratory procedures book was written.

Third, a plan developed to save $5000 a year in postage charges by submitting to the laboratory fewer samples. By analyzing fewer samples, laboratory man-hours were released for other productive work. The analyzed samples still showed the same control.

Fourth, statistical analysis of the laboratory data, showed rather conclusively, differences in techniques, in laboratory equipment, and in manufacturing processes.

Why was the program terminated? Apparently, some people in the organization couldn't stand the truth.

Don't give a man responsibility without authority. Don't tie the hands of a department which you want to function properly and efficiently. How would you like to be the quality control inspector who, in four successive shipments of shipping cases, found them to be non-conforming to specifications, recommended rejection, and yet saw them kept and used?

Even the vendor admitted they were wrong and yet nothing was done. Then, there was the purchasing agent who said, "Maybe we should return this drum of raw material. It will teach them (vendor) a lesson". The analytical laboratory had already reported the material as non-conforming to specifications.

Don't try to solve all your problems in one day. Take first things first. Take any given trouble point, or where you think you have trouble, and begin there. It's entirely possible you will be led to the real trouble spot. For example, there was the quality control department which was called in to study a problem of why an automatic inspection unit was rejecting so many bottles.

(a) It was found that the manufacturer's specifications for washing the bottles were not being followed. The temperature was to be held at not more than 160 degrees F. The temperature found was 180 degrees F.

(b) The costly cleansing agents were recommended at a ten to one ratio. It was found that these were being used one to one. Six months later when the compartments were to be checked and cleaned, the cakes on the coils were so hardened, that hatchets had to be used to remove the scale. Think of the cost involved —detergent being washed down the sewers. Extra time for cleaning! And dirt so imbedded on the bottles by the high-temperature soaking compartments that the automatic inspection unit couldn't function properly.

So where does the trouble lie? Quality control found the spots. An operating specification was set up. A training program put into effect for the operating personnel. Result: Clean bottles, less cost, and good automatic inspection.

Place In The Organization

Just where should the quality control department report? To the production department, the chief chemist, analytical laboratory, or the engi-

(Continued on Page 36)

Installation of packaging machinery running substantially faster than the equipment it replaced gave Verifine Dairy Products Company a new set of problems. Changes in packaging line techniques, including the delivery and take-away of products, had to be made. This article describes the making of these changes and reviews the effectiveness of Verifine's present operation.

Fitting high-speed machinery into an existing line

Installing and operating a new type of wrapper, Verifine Dairy Products Company, Sheboygan, Wisconsin, is now getting not only higher production speeds but also reduced change-over time. In making this change, the company has modified its packaging line techniques and its use of packaging line personnel. These changes relate to the problem of keeping the wrapper supplied, as well as to the disposition of wrapped items.

Producing a full line of dairy products, Verifine faces the problem of frequent change-over — although on its ice cream items it tries to operate at least a full day on a given product. The processing and packaging line utilizing the new wrapping operation illustrate this diversity: Individual slices of ice cream, Eskimo Pies and a variety of specialties such as fudge bars and toasted almond bars — all move through this equipment.

Prior to the packaging operation, these various products are formed from extruded ice cream and cut to pre-determined lengths. Cut pieces go into a chill box for a 40-minute cooling period. Each piece or bar rests on a stainless steel pallet for a 700-foot conveyor ride within this equipment. After being discharged, this production goes through an enrobing operation except in the case of items requiring no chocolate coating. Whether enrobed or not, these items next go through a chill tunnel, after which they pass to a conveyor leading into the Eskimo wrapper.

High-Speed Wrapping

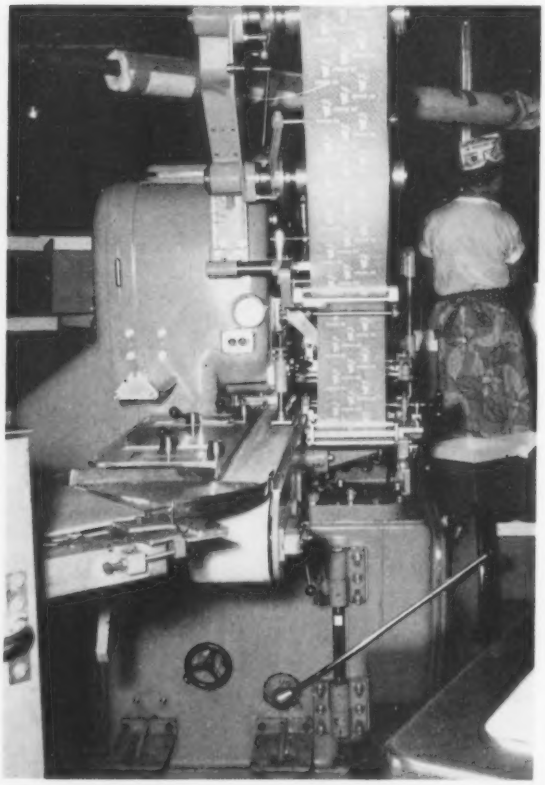
Verifine operates this machine, an Italian-made Supermatic unit, at speeds from 90 to 160 pieces a minute, with a typical rate of 140 a minute. Using roll stock, the machine wraps these products in aluminum foil, waxed paper or glassine.

Focal point of the machine and the evident source of its high speed operation is the means by which a cut wrap is held in place on the bar or piece while it is going into the forming head. As the pieces enter the machine, each piece is pushed to a product elevator. Next, a cut piece of paper or foil is "shot out" over the piece — after which a retaining bar comes down. This holds the wrapper on the bar during movement into the forming head.

From here, the piece and its wrapper are carried into the folding shoes. After this, the wrapper is folded into place around its product. Following this operation, the wrapped pieces pass to the discharge belt.

Positioned over this belt are spring-loaded bars. These rest on the wrapped bars or pieces passing under them during the movement on the belt. These bars serve to hold the fold of each wrapped item until the wrap sets. This is necessary because the wrapping is simply a creasing action — there is no heat seal.

This freezer box serves as a backlog for ice cream bar and slice production. During a wrapper stoppage, crew members put the oncoming ice cream items into the freezer. Similarly, when production is stopped, they take items from the freezer — in order to keep the wrapper charged with product.



Using roll stock, this Eskimo wrapper operates at speeds from 90 to 160 a minute with a typical rate of 140. It uses a variety of material such as aluminum foil, waxed paper, and glassine. Discharge point of production equipment is at left. Freezer box serving as backlog is at lower right.

Wrapping material in the form of roll stock feeds into the machine. There is an electric eye control of registration, as well as an automatic adjusting means. An important point in the controlling of wrap stock movement is the over-feeding of it a few thousandths of an inch. As the stock over-feeds, a roller pulls it back. The action of this unit is especially necessary when the stock has been overfed more than the usual tolerance. In this case, the draw is actuated.

Basically, the key parts of the wrapper operate on a Geneva drive principle. The drive equipment works entirely off the cams. Operation of the machine is automatic; even so, an attendant is necessary. His services are particularly important during the change of wrapping material. This takes place during an interval of about 30 seconds.

What happens to the flow of ice cream pieces while a paper change is taking place illustrates Verifine's personnel and equipment modifications developed for this line. Positioned near the wrapper is a freezer unit like one used in retail stores for ice-cream storage. While the wrapper is stopped and the ice cream products keep on coming from production equipment, the attendants put them into the freezer. Similarly, when the flow of production is halted, a supply of items from this freezer permits keeping the wrapping machine in operation.

Fast, Skilled Movements

Important to the operation of this line are the skill and speed of the personnel who keep the wrapper charged with product. They must make sure that pieces moving into the wrapper are in correct position. They have to be very fast in their movements when diverting production to the freezer, or in feeding the conveyor from this freezer.

During a paper change involving 30 seconds, some four dozen bars or pieces must be picked off the conveyor — to avert a jam. Because of the various intermittencies of production, the crew members on the line must develop a knack for proper handling of the flow of work.

Wrapped pieces leave the discharge

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conveyor of the wrapper and pass to a packing station. Because of the speed of wrapping it is necessary to use three packers during a typical operation. They pack corrugated boxes (with a lining of white stock) containing three gallons of ice cream each, in the form of individually wrapped slices, running 32 to the gallon. While two girls (one on each side of the station) place wrapped slices in boxes, a third girl is closing these boxes.

Other types of production, individual pieces of bars, go into cartons for over-wrapping. Adjoining the packing station is a Hayssen wrapper. Typical of this kind of packaging is Verifine's Princess Pak half gallon: After the packers place 16 individually wrapped slices in a carton, they close it and feed it into the Hayssen unit — thus giving each carton an over-wrap of printed foil.

Another adjunct of the packaging line is a Nashua taper. It is used chiefly for the closing of bags and cartons containing various products and quantities.

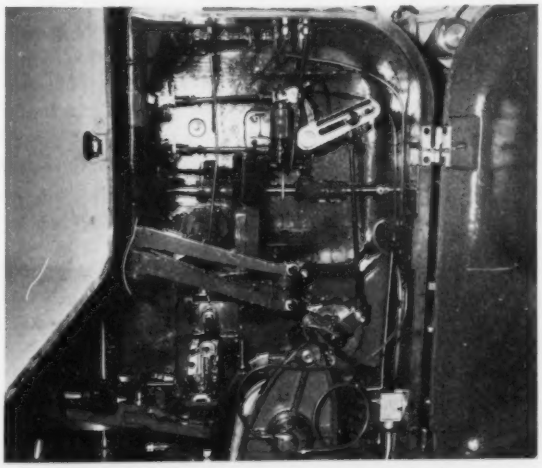
May Revise Layout

Like most plants where a packaging line is somewhat in a state of transition, Verifine's Sheboygan plant is experimenting with the position of these various equipment components. Currently, the Eskimo wrapper stands at an angle to the principal items of processing equipment. Now that they are accumulating definite experience with their new operation, company executives are engineering a floor plan that will permit operating the wrapper on a straight, in-line basis.

Similarly, they are finding that stepped-up mechanization at one point on a line creates pressure elsewhere. A current example is the handling of cartons at the packaging station. It is necessary to develop skill in the packers so that they get the knack of handling these packages. Whether or not eventual mechanization will prove desirable, the present operation at Verifine results in the training of its line personnel in such a way as to capitalize on their inherent manual skills — conducive to peak production.

Major feature of this machine is the means by which a cut wrap is held in place on the ice cream bar or slice while going into the forming head. What happens is that after a piece is pushed to the product elevator, the wrapper is"shot out" over it, and held in place by a retaining bar during movement to the forming head. Spring-loaded bars rest on wrapped pieces (moving away, at right) to hold the creases in place.

Speed of equipment necessitates three girls at this take-away point. While these two girls are packing individual slices into bulk containers, a third is closing boxes. Not visible is a Hayssen over-wrapping unit which is used for some items. The pack seen here is a corrugated box containing three gallons of ice cream in the form of individually wrapped slices.



Exposed rear area of wrapping machine reveals details of its automatic lubrication system. There is constant lubrication by means of a gravity system. Basic operation of the machine itself rests with a Geneva drive principle.

Robert N. Johnson attended Indiana University and the University of Alabama, receiving a B. S. degree in chemistry. Upon graduation he joined The Kroger Food Foundation as an analyst. Later transferring to the manufacturing division, he became a process chemist. Subsequently, he was made candy superintendent, chief chemist, and quality control manager. Mr. Johnson is a member of the Institute of Food Technologists, American Association of Candy Technologists, American Chemical Society and Packaging Institute.

Few single plants produce as wide a range of food products as does the Cincinnati plant of The Kroger Company. Likewise, few companies have its background of research. All this provides a unique foundation on which to predicate this article. In it, Mr. Johnson not only reviews some practical operating pointers concerning materials but also emphasizes the importance of adequate material testing.

Determining performance requirements of flexible packaging materials

By Robert N. Johnson,
Manager, Quality Control, Cincinnati Manufacturing, Processed Foods Division, The Kroger Company Cincinnati

Correct determination of requirements for various packaging materials is a topic that is becoming more and more important to us. The range of materials we use and the diversity of our plant operations contribute their own complications to our problem. However, we are now crystallizing our accumulating experience and are shaping the patterns of our use requirements for these materials.

Further, we are trying to make our procedures and approaches as practical and as uncomplicated as we can, commensurate with the complexity of our problems. In a nutshell, our objective is to determine what is important to us in a particular packaging material, and to ascertain how we may most reasonably and practicably test our materials.

Fundamentally, we determine the results of our program by the presence or absence of complaints, by the kind and frequency of problems arising. We attach real importance to customer and store-level complaints because the prompt sale of a product that meets the satisfaction of a customer is the final arbiter of the effectiveness of our packaging. As a lead to establishing requirements for packaging materials we investigate complaints and find out what is happening to our packages.

There are two major aspects of our packaging material consideration. First, there is the requirement of the product itself. We have to know just what a particular food item needs, such as the presence of breathing properties—or the absence of them. We are fortunate in having the background of our Kroger Food Foundation, whose research and development work in food content, properties, requirements, et al, helps us greatly. Second, there is the use requirement of a packaging material—such as how it stores in our plant, how it runs on our packaging machinery, and how it does its job of meeting the product protection requirements demanded by a particular food item.

Determination Procedure

We have a step-by-step procedure which, simple as it is, may prove helpful to others faced with problems similar to ours.

1. We review and compare the qualities or properties of the food item, i. e., the package contents, and those of the packaging materials involved.

2. We make regular analytical tests in order to see what is happening, such as when we place chocolate on boxboard.

3. We actually package the product and submit the packages to varying conditions of temperature, humidity and handling. Handling tests, including drop tests of cases, are important.

4. To make actual shipping tests, we package quantities of the merchandise under consideration, sending it to stores and branches. We examine the packages upon arrival and couple this examination with appropriate laboratory tests.

5. Much later, perhaps a month or

so, we follow up, checking the packaged product in our various stores.

6. Our final consideration is the presence or absence of complaints. If there are complaints, we look into them, to see what has happened and what can be done.

Through all phases of this procedure we have almost constant discussions with our suppliers of packaging material. In fact, we rely heavily on their use of quality control. Our diverse use of packaging materials makes a full or typical program of statistical quality control of incoming materials impossible to carry out without excessive inspection personnel. We are trying, however, to work out an inspection program predicated on our needs—and based on practical and reasonable specifications which we are working out with our suppliers.

Six steps in package evaluation:

1. Comparing properties and qualities of the product with those of its packaging material.
2. Making regular analytical tests.
3. Exposing completed packages to varying temperature, humidity and handling conditions.
4. Making actual shipments, with detailed examination of packages upon arrival at various destinations.
5. Following up (at a later time) by checking condition of packages in stores.
6. Facing the final arbiter—the presence or absence of complaints.

Flexible Materials Used

Principal flexible packaging materials used include saran, polyethylene, cellophane, and paper. Within our Cincinnati manufacturing operation, we use plain and printed cellophane, labels, and saran in our meat plant; we use plain cellophane and waxed paper in our bread bakery; plain cellophane, labels and board in our cake bakery; plain and printed cellophane, plain and printed polyethylene, glassine, board, labels and saran in our candy operations; glassine, tea bag paper, printed cellophane and board for our tea items; plain cellophane for peanuts; glassine and labels for coffee; glassine and board for gelatin items, and board for our dairy products—plus a wide range of labels for our label room usage.

An important lesson we have learned is the necessity of providing a variety of storage conditions for flexible packaging materials. Aside from physical proximity to our various operations, we have to meet differing needs. For example, we must maintain the moisture content of printed cellophane and fabricated cellophane. At the same time, we must decrease the moisture content of printed polyethylene. Obviously, we cannot store these together. In developing storage arrangements to meet different sets of conditions we are relying heavily on the recommendations of material suppliers—whose suggestions are based on a broad background of experience.

Operating With Saran

We make extensive use of saran for candy bags. It is excellent for hard candy and the like because of its low water vapor transmission rate. In effect, it prevents hard candy from sticking. Further, because this film is very tough, the sharp edges of hard candy do not puncture it. Also, it does not shrink and it remains flexible. However, its heat sealing tolerance is much lower than that of either cellophane or polyethylene.

Our experience with saran shows the importance of using the right material for a given product. For example, we tried using it for oil roasted peanuts, an item that usually has a short shelf life. We thought that saran might give it a longer shelf life. However, this was not the case—and the product developed premature rancidity. So, we went back to double cellophane as the most suitable package material.

What had happened was that the saran allowed no breathing. The oxygen remained in the package and the entrapped gases could not get out. Even though cellophane allowed only a small amount of breathing, it was sufficient. This experience confirmed our judgment in insisting on adequate testing of packaging materials and packages.

Illustrative of this is our general testing of bags. We usually fill and seal the products, and put them in cases. We then make drop tests, using regular heights, such as 30 inches. Cases contain the normal number of bags usually placed in them. After the tests we check to see if any bags are punctured or broken. We examine bag stock and bag seals. We also make similar tests after the packages have been stored in a freezer at minus ten degrees F and at 110 degrees F. It is important to make sure that the entire lot of packages is adequately exposed. After making tests, we study the results—to make comparisons and interpretations.

Usage Of Polyethylene

Our experiences with polyethylene illustrate an approach to the solving of specific packaging problems. We tried packaging gummed candy in perforated bags. When we did this, the sanding sugar came out through the holes in the bags. We then tried a bag with no holes, which we closed with a tie, leaving the tie fairly loose to allow breathing. Next, we started getting complaints about our tape tie.

We found that with a loose tie, if there is room for a piece of candy to work into the tie, it will open the bag. We tried using a tighter tape tie and this solved the problem. Even

though the bag opening is more or less tightly closed, there is still sufficient breathing facility provided. This again emphasized the need of adequate package testing.

While investigating the cause of complaints of hard candy packages, we learned that in the lower gauges polyethylene would not withstand puncturing. We had to go to 300, even 450, to get a material that would withstand puncturing. Now, we are making extensive drop tests as a phase of our effort to get the proper gauge. For example, we use a very light gauge for marshmallows and a much heavier one for hard candy.

In choosing the desired material from the various grades available, we try to get maximum transparency in our polyethylene. Currently, we are using printed polyethylene, so we seek clarity as well as puncture resistance. In conection with all of these films we make whatever tests are appropriate in order to be sure the product going into the package, gets the treatment it needs. For example, it may require breathing—or a complete absence of breathing.

Cellophane Applications

In our use of cellophane we find considerable advantage in using double rather than single film, such as double 300 instead of single 450. Even where the total of the two is the same as the single, we prefer double film. The latter has more puncture resistance and is a better moisture barrier.

Underlying this is the fact that a moistureproof cellophane is coated on both sides. Therefore, with a double film, there are four coatings involved. For example, where a single film is "70 per cent moistureproof," it means that "30 per cent" is transmitted out through the film. With a double film, only nine per cent gets out. What happens is that 30 per cent gets out through the first film and in turn 30 per cent of this 30 per cent escapes through the second film. Therefore in effect, only nine per cent gets through the double film.

Another reason for double film is that we can reverse print the outer sheet. This gives an enhanced appearance, since the printing is seen through the film. Further, we have to use double film for reverse printing, since federal regulations do not permit ink next to a food product. In this connection, close visual inspection of bags for proper registration, color, opacity of printing, and detail are important.

We seek flexibility and clarity in our cellophane. We watch closely for dryness and deterioration which may be caused by a lack of moisture. We pay particular attention to rotating our stocks and we are watching closely the matter of proper care in the storage of cellophane. On the other hand, cellophane is easier to handle and is cheaper than most other films and is available in more types. It runs well on machinery. For example, for overwrapping, it is in a class by itself.

Experience With Foil

We use aluminum foil for overwrapping candies and boxes, and for products such as peanut brittle. We watch the caliper and weight of the foil very closely. Our foil typically is laminated to paper, and it must not tear at the edges when creased. Since we use it for underwraps for certain candy items, we find that non-sticking is very important. For example, we have learned that foil laminated to cellophane sticks more than foil laminated to waxed paper. The wax in the paper and its lack of adhesiveness contribute to the ease of release or the absence of sticking.

Our experience with printed foil wraps indicates that it is very difficult to lose all of the ink odors in the printing. These phenolic odors are strong and are easily detected, at least by a person fairly sensitive of smell, and we are still looking for the answer. We have tried a number of expedients but the final solution is not yet indicated. Even so, we are looking forward to expanding our use of printed foil, such as for labels.

Paper For Packaging

Illustrative of our use of paper is the heat sealing filter paper used for tea bag stock. We check it upon arrival to determine that it has proper heat sealing properties, has no off flavor and does not disintegrate in hot water. Also, performancewise, it is very important that this paper does not jerk or tear as it goes through our machinery. Because of the more or less jerky motion of the paper going through the machine the material is vulnerable to tearing. Likewise, we must have paper that does not stick or jam in the machine.

A special problem in connection with tea bag stock is that there are reasonably close limits on stock variations. For example, it can be neither too thick nor too thin, too stiff nor too flexible. Any extremes in this regard causes jamming. What we do is put a given stock on a machine and run off a few packages with it, make some observations and study the resulting packages. We put them in boiling water, and check bag conditions as well as aroma. We make bursting, tensile strength and other laboratory tests. Likewise, on our bag tags, we watch caliper and basis weight.

Our experiences with coffee bags have revealed that most burst bags are due to two causes: (1) Weak bags or (2) extra rough handling. When we get complaints of this sort we try to get samples of the bags involved so that we may test them. Incidentally, we have very rigid specifications for the glassine liner of coffee bags, including tests covering basis weight, caliper, and the like, as well as tests for pinholes and resistance to grease or fat transmission.

Performance requirements dictate testing the material for tear or tensile strength. This is important because if it tends to shatter or tear easily it will cause trouble on a machine.

When we started experiencing difficulties with the liner of our package for gelatin dessert, we traced the trouble to our paper. What was happening was that the top fold, the top edge of the package was tearing. We found that if paper is low in moisture content there will be tears along such creases. In this same package we found that proper moisture content is important to the carton stock. Now, for paper and carton stock, we are setting up definite tests for moisture content.

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Packaging Institute forum stresses dynamics, flexible packaging materials

Among the major features of Packaging Institute's 18th Annual Forum were an integrated session on "the aggressor forces" of packaging (biotics, climatics, mechanics and chemicals), and an all-day program devoted to flexible packaging materials. Here are some highlights gleened from these penetrating sessions.

Packaging Institute launched the technical program of its 18th annual forum with a series of integrated addresses on the basics of the dynamics of protective packaging. Dr. Frank C. Campins, Polymer Industries, Inc., chairman of the session, pointed out that these dynamics include natural and man-made forces which are aggressors against the victim, i. e., the product being packaged, and that the package is the barrier between these forces and their victim. These four include biotics, climatics, mechanics and chemicals, and every packaging program must consider their effects, according to Dr. Campins, who observed that the weakness of the product must find complementary strength in the package.

"There is a law of a universal vulnerability," he declared. "The vulnerable part defines the needs and type of protection required." He noted that any packaging failure tends to become both localized and maximized, and that all packaging must be built in a selective manner. The goal of the packaging engineer is to minimize the rate of progression of these invading forces—which can never really be eliminated, Dr. Campins asserted.

Biotics Of Packaging

"Molds, not bacteria, are the trouble makers in a package." Dr. John C. Bird, now retired but who was long associated with Lederle Laboratories, told his audience. Pointing out that any discussion of biotics focuses on molds, he described these as being like tiny plants without chlorophyll, thriving as parasites on living organisms. "Their digestive action is what we know as decay," Dr. Bird observed, explaining that molds have a remarkable capacity for reproduction and that moisture speeds their growth.

Discussing efforts to prevent and retard molds, he pointed out that some impregnated wraps are used, as well as some volatile substances. However, there is no satisfactory impregnant and no universal or ideal mold preventive, Dr. Bird noted. Further, each one used should be watched closely and checked under actual conditions, he cautioned, speculating that even if man succeeded in controlling molds, the whole thing might boomerang, as 'much useful work' is done by molds. "It's still a moldy world," Dr. Bird concluded.

Climatics Of Packaging

Temperature, radiation, water, air velocity, relative humidity, and air pressures are among the climatics of packaging, which work together with the other dynamics—against the package—according to Dr. L. E. Simerl, Olin Mathieson Chemical Corporation. Many materials deteriorate at high temperature, or may operate adversely, such as when waxes and resins block and stick. On the other hand, he observed, sub-zero temperatures simplify many packaging problems, even though some materials become brittle or lose strength. Paper, wood and metal remain satisfactory, but auxiliary materials used with them (such as adhesives) fail at such temperatures, Dr. Simerl explained.

Many products lose quality when there is a gain or loss of relative humidity present, rather than a condition of equilibrium, he noted. Radiation, such as sunshine, has a drastic effect on materials and coatings, resulting in significant chemical and mechanical effects. Dr. Simerl suggested that heavy pigmenting and the use of a weatherometer may prove necessary. In general, weather effects are closely related to the biotics because changes in weather accelerate packaging deterioration.

Water and water vapor cause many packaging problems, according to Dr. Simerl. He warned that the testing of a package must be done within the range of conditions to which it will be exposed. There are some materials that have an intermediate controlled level of performance; many flexible materials are relatively good for a short length of time. Few packages are designed to withstand water in liquid form, but protection against this hazard is simply a matter of cost, he noted.

Mechanics Of Packaging

In studying the problem of controlling or minimizing the mechanical hazards to establish the minimum protection necessary, Allyn C. Beardsell, Container Laboratories, Inc., urged attention to the landmark work of Professor R. D. Mindlin of Columbia University. "His basic thesis, established some time ago, was that if three factors are known, a packaging system can be developed," Mr. Beardsell asserted. "These are (1) the hazards of transportation, (2) the strength of the product, and (3) the characteristics of the packaging material."

He pointed out that major mechan-

ical hazards include impacts and shocks, forces to distort or crush, and vibration. Further, he observed that adverse climatic, biotic and chemical forces intensify these hazards. In this connection, most pretesting programs are based on a cycling approach, such as used by the military. Further, progress is being made in realistic reproduction of transportation hazards.

"There is a great need for basic research to determine the behavior of materials under varying conditions, and a real problem is involved in the intelligent use of data," Mr. Beardsell declared. Further, he suggested more attention to adverse conditions for package testing, instead of the so-called normal or ideal conditions usually reported.

Chemicals Of Packaging

"The packaging engineer must have an understanding of the chemical factors and what happens in the course of events separated by time and space that involve the package," W. E. Brown, The Dow Chemical Company, told his audience. Factors requiring such attention include inertness to the product; selective permeability to gas, liquid and oil; corrosion and resistance to exposure; machinability, and the fact that the package life must exceed the product life. He also urged attention to problems of safety and to the temperature range involved.

Mr. Brown pointed out that selective permeability can be tailored into a package: "You can laminate or coat, blend, machine and irradiate these materials," he noted, declaring also that approximate permeabilities can be predicted. He noted that irradiation offers possibilities as a way of changing the machinability characteristics of materials.

Flexible Packaging Seminar

"Laminations and the coating of materials permit the pooling of properties to attain protection versatility," John M. Cowan, National Flexible Packaging Association, observed as he opened the seminar on flexible packaging materials. "Use of these combinations will become standard practice for the packaging engineer," he predicted. Further, there are not only many different combinations possible, but also, new ones are constantly appearing. As a result, Mr. Cowan indicated, there is not one answer but a number of alternative answers to almost any problem of this kind.

He urged that a nomenclature and set of standards be developed. There must be agreement on such topics as tolerances for yield and gauge, and the development of test methods to determine performance is especially important, in his opinion.

Cellulose Acetate

Speaking on the diversification and growth of acetate laminations, David S. Hopping, Celanese Corporation of America, said that the clarity, long life, scuff resistance and dielectric strength of this material permit it to make both functional and appearance contributions to packaging laminations. He also cited its properties of greaseproofness, waterproofness, stability and aging characteristics as reasons for its increased use.

Illustrative of the current use of such laminations, Mr. Hopping suggested the recently developed "cook-in" pouch; it uses a lamination of acetate, foil and polyethylene. Further, use of such laminations is not confined to packaging; they are found in graphic arts and industrial applications, also.

Aluminum Foil

Discussing the thermal insulating property of aluminum foil, such as for frozen food packaging, A. I. Totten, Reynolds Metals Company, cited two important considerations: Thermoconductivity and reflectivity. He noted that aluminum foil has 625 times more effectiveness than the next best material, when considering its conductivity, such as expressed in terms of the quantity of heat flowing through the material in a given time. Further, Mr. Totten called attention to the importance of high heat reflectivity: Aluminum foil reflects up to 95 per cent of radiant heat to which it is exposed.

However, he warned that this decreases with darker colors, when used, and also with a thicker film. Further, the rate of heat exchange is affected to a negligible degree by the conductivity of the surface. Turning to frozen food, he said that conductivity and reflectivity are important in regard to freezing, storage and thawing. The conductivity of foil contributes to a faster freezing rate than possible with other materials, Mr. Totten suggested, noting also when ice cream in an open top freezer cabinet has a foil overwrap there is a nine-degree advantage in exposure to radiant heat.

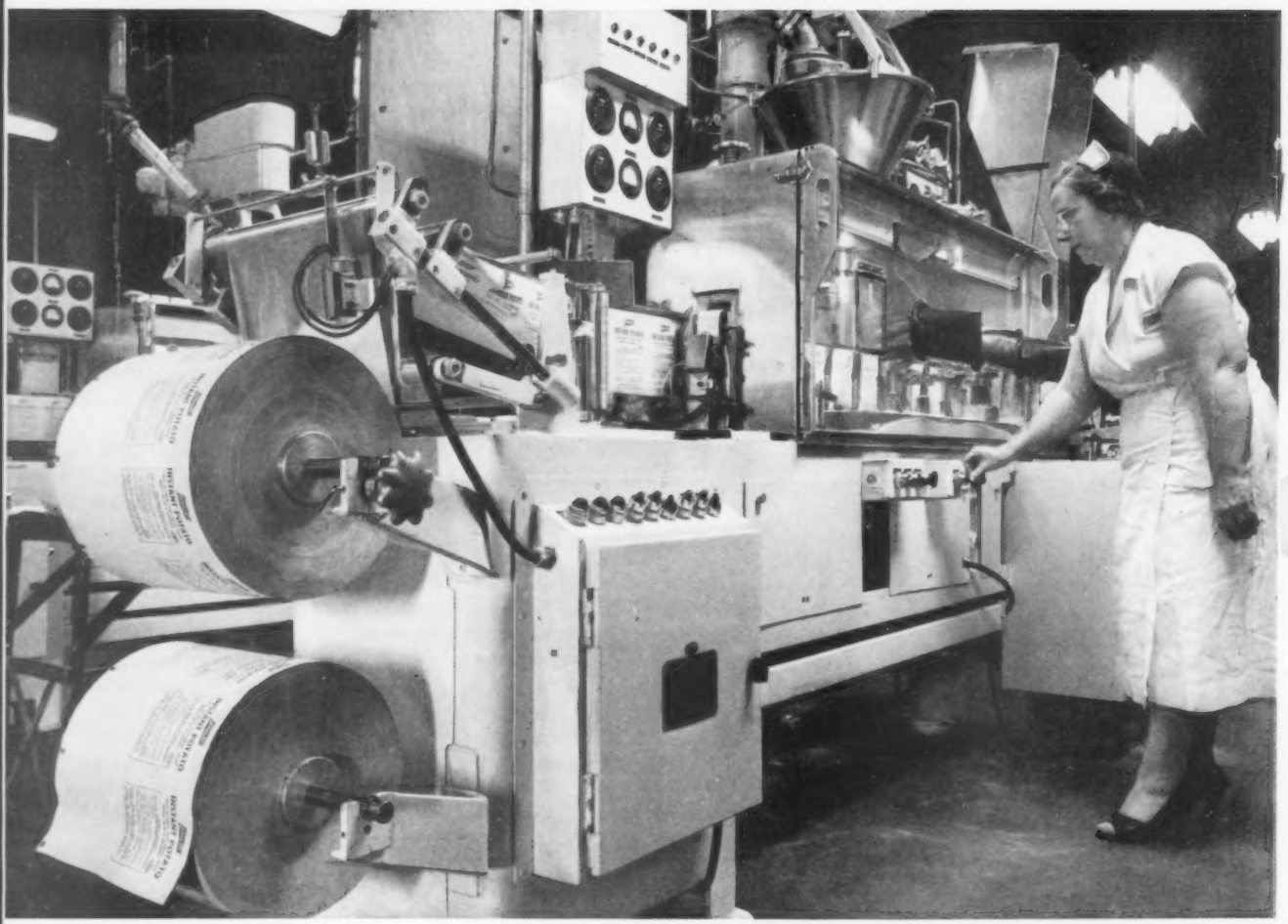
In discussing product temperature control of perishables in bulk shipment, he urged placing the foil di-

Editor's note

PI's food packaging seminar concentrated its attention on the work of the Quartermaster Food and Container Institute for the Armed Forces, with protective packaging for the services as its theme. We direct our readers to Pages 14, 15 and 41 of our May issue, in which we highlighted some of the landmark work and forward thinking of the QMFCI.

—R. B. H.

Step up point-of-sale demand



Polyethylene and foil provide water-vapor transmission resistance in this package made by Reynolds Metals Co., Louisville, Ky. Humidity cannot get at the product. The foil is a gas barrier to retain the nitrogen, and the polyethylene heat seals excellently, allowing assured closing of the package.

"polyethylene-coated foil enabled us to double shelf life"

"Instant Potato" according to the R. T. French Co., Rochester, N. Y., "is actual cooked potatoes, reduced to granular form . . . food which must be kept fresh. It was necessary to create a package that would retain its own inner atmosphere, despite handling in shipping and storage on shelves (either in the store or in homes). The package should be colorful, flexible, and small. It should be sealed completely.

"Our production has reached 20 million packages and the market is still expanding. Due credit must be given to the packaging."

French's
INSTANT POTATO
EACH OF THESE "STAY FRESH" PACKS MAKES UP TO 4 SERVINGS
FOR BEST RESULTS FOLLOW THESE DIRECTIONS EXACTLY
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Polyethylene bags for "Snow Crop" multiple units are supplied by S. Posner Sons, Inc., Brooklyn, N. Y.

"sales have increased up to 35% because of multiple packaging in polyethylene film"

According to Fred J. Krisch, assistant sales promotion manager, Snow Crop Division, Minute Maid Corporation, New York, N. Y., "We have found that by bagging three or more of our frozen fruits and vegetables in polyethylene bag, sales have increased up to 35% above normal. The reasons for choosing polyethylene include (1) least expensive of materials available, (2) best bagging operation for multiple units, (3) easy to ship in bulk, (4) good printing, and (5) reuse value to the consumer."

Look into film made of BAKELITE Brand Polyethylene for packaging practically anything from hardware to frozen foods.

Be sure to specify . . .

BAKELITE BRAND PLASTICS

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

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rectly next to the warmer surface, and vice versa with a colder surface, in order to avoid the condensation which impairs the protection furnished by the foil. In other words, foil is the inner or outer ply of the package, depending on the warmth or coldness of the product.

Use Of Mylar

As he described packaging applications for multi-layer structures containing Mylar polyester film, W. H. Wood, E. I. du Pont de Nemours & Co. (Inc.), suggested that this material's combination of properties offers tensile strength, as well as bursting, impact and high initial tear strength, in addition to elongation and moderate permeability. Reviewing different combinations, Mr. Wood noted that a combination of Mylar and polyethylene permits the heat sealing of the resulting material, and that Mylar and saran closely enhance each other when combined.

Further, these may be combined either as laminations or with the use of coatings. In this connection, he predicted that "in a year or so" his company will offer a coated Mylar, suitable for heat sealing. Discussing other combinations Mr. Wood speculated that a Mylar-kraft lamination might be useful to protect against such abuses as take place during the storage of packages. "But the ultimate in product protection occurs when the package is Mylar backed to foil," he asserted, adding in his review of possibilities the use of a Mylar barrier within a metal can for an aerosol product. This makes possible keeping the product and propellent apart, and either one of these may be inside the pouch within the can.

Paper As A Material

"Paper is the backbone of flexible packaging," E. G. Penn, Riegel Paper Corporation, asserted. "Combinations of all these materials represent the packaging engineer's art, and the backbone of these combinations is paper," he said. There is considerable research in progres involving paper and this goes back to the trees from which the pulp originally comes, according to Mr. Penn. Other significant efforts include the addition of chemicals to increase water repellency, and to give greater flexibility and strength.

Noting also that improvements in smoothness and slip, as well as in release properties, is getting much attention, Mr. Penn reviewed the packaging advantages derived from these studies and efforts. But he concluded that the research of the future centers on the search for new fibres to use in paper.

Thermoplastic Films

Discussing thermoplastic films in laminations, as used in pouch type packages, Paul Beebe Jr., The Goodyear Tire and Rubber Company Inc., said the basic purpose of these materials is to provide the heat seal. In this connection he noted that the seal must be positive all the way around the package, all of the time, and must have adequate strength for use conditions. However, he pointed out that a thermoplastic film heat seal cannot rupture until the non-extendable material in the lamination does so. It is the material—not the seal—that comes apart, Mr. Beebe observed.

Looking at the mechanics of seal failure, he noted four steps or phases: (1) No pull, (2) delamination takes place, (3) elongation occurs, and (4) the break appears. However, it is important to consider the breakage of the web, Mr. Beebe suggested, pointing out that the break cannot take place until the film has been elongated. Because of the importance of the adhesive in this problem, he urged his audience to be alert to new developments in adhesives.

"Increased thickness does not necessarily improve the protective property of the material," he declared, adding that instead of a film, a coating may be used. In this connection he pointed out that a stretch lamination of Pliofilm makes it available in coating thickness. For example, a 75 gauge material may be laminated at 18.75 gauge, and there is a gauge uniformity of 2.5.

Polyethylene In Packaging

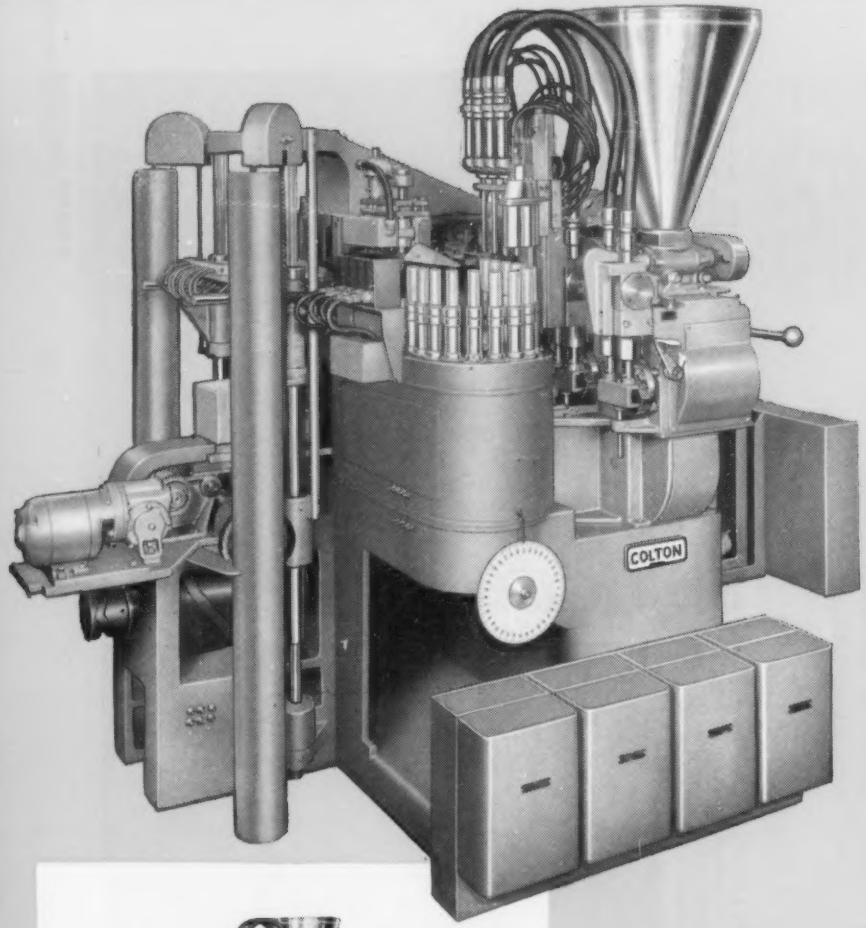
Reviewing the development of polyethylene and the growth in its use, W. B. Tibbets, Bakelite Company, Division of Union Carbide and Carbon Corporation, predicted that in the near future, perhaps by 1960, this material will be used at the rate of a billion pounds a year. Currently available polyethylene ranges in density from .914 to .928, with 30,000 square inches (one mil thick) per pound. There is much interest and research in high pressure and low pressure polyethylene, and much development work of the newer resins is under way.

Because of the overlapping of the chemical properties of the high and low density materials, it may be necessary to come up with new classifications and nomenclature, Mr. Tibbetts observed. However, density is a useful yardstick in this connection, he suggested.

A laboratory development that may become available to the field in the near future is the control available through use of a coating barrier. In reviewing the properties and advantages of currently available polyethylene, Mr. Tibbets urged that adequate attention be given to proper storage pending use. He noted that some apparent disadvantages actually prove advantageous, such as some gases and essential oils being able to pass through polyethylene.

Our next issue will carry the balance of our report of the flexible packaging seminar as well as our report of other sessions of the 18th Annual Forum of Packaging Institute. Watch for this material in November: It will summarize some significant current thinking concerning drug and pharmaceutical packaging, production line operations, and research and development.

For more information circle No. 209 on Reader Service Card →



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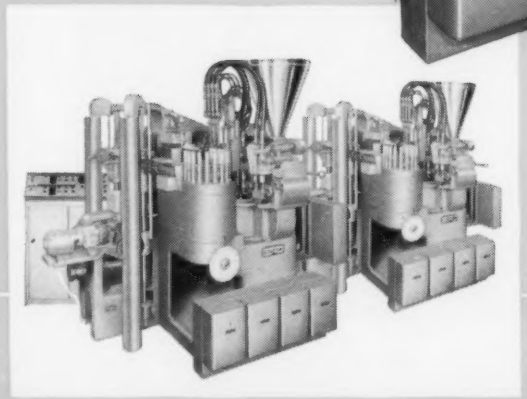

A typical Tandem installation occupying only 65" x 180" floor space and filling 300 tubes per minute.

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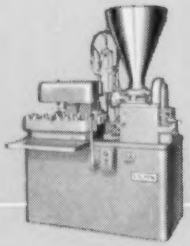

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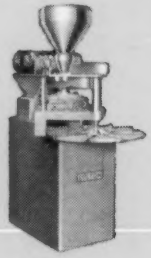
Automatic Tube Filler:
tubes per minute;
55 Single, 85 Twin.



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Automatic Multiple Liquid Filler
for bottles, jars and cans.
Capacity: Up to 480
fills per minute.

Colton No. 130
Ointment Filler:
25 to 30 tubes per minute.

Changing the package of a military aircraft component

By Armond A. Fratello,
Traffic Manager,
Sundstrand Aviation,
Division of Sundstrand Machine Tool Company,
Rockford, Illinois

A military packaging specification is not a fixed, unalterable document. As shown by the experience of Sundstrand Aviation, the federal specifiers of packaging are open to suggestions—and readily revise their requirements when shown the efficacy of the suggested package. This article not only describes the details of making the change but also reviews the advantages and savings accompanying it.

By the time each drive reaches the packaging area all preparatory work is finished and the item is ready for packaging. Behind these drives is a set of molded pads for the packaging of one of the units. These pads conform to requirements of Mil-C-7769.

Ready for the top pad this item rests in its re-usable metal container. The drive itself is inside a polyethylene bag, ready for the positioning of the top molded pad. Sundstrand saves eight dollars a package, as well as 2.67 cubic feet each, and gets a weight reduction of three pounds.

Armond A. Fratello has been associated with Sundstrand for twelve years. As traffic manager, he has responsibility for all packaging and shipping, as well as traffic. He was packaging supervisor prior to becoming traffic manager. Mr. Fratello studied for two years at Illinois Institute of Technology prior to joining the U. S. Marine Corps—where he spent three years before joining Sundstrand. He is a member of Packaging Institute.

By instituting a change in governmental packaging requirements we recently found a way to get substantial savings in our packaging of aircraft components, such as drives. There was nothing wrong with the package as originally indicated by the military specifications but we thought we could improve it. After developing this new package we secured federal approval of it. This gives us a cost reduction per package of eight dollars, a space saving 2.67 cubic feet and a weight reduction of three pounds.

The former way of packaging these components involved first wrapping them with creped greaseproof paper, Grade A, then bolting each to a precut and drilled base. This preliminary package went into an aluminum foil scrim pouch, Mil-B-131B, to which a desiccant was added. Our crews then bolted all this to a skid and removed the air from the package in the course of sealing it tightly.

They then wrapped it with cellulose wadding and secured it with tape before putting the hood into place. They next secured each hood to its base with screws. By this time it was complete. This package thus involved a wooden crate with a corrugated insert cushioned with cellulose wadding. However, even with all of this protection the package was still vulnerable to shock, moisture and fungus.

Details Of New Package

Our current package involves a polyethylene bag, molded pads of rubberized animal hair, Mil-C-7769, and re-usable metal containers, Mil-C-6054, special. Each aviation drive comes to the packaging line on a specially-made skid ready for packaging. All preparations, lubrication, and final assembling takes place before the unit reaches our packaging area.

Next, our crew members put each item into a polyethylene bag in accord with military specifications. If the item is destined for long storage a desiccant is added. If it is scheduled for direct shipment to a military installation, there is no desiccant used, unless requested by the Air Force.

We schedule our in-plant deliveries so that the various packaging components reach the packaging area at the same time the items to be packaged arrive. The packaging components include a steel drum, reusable container, an unsupported polyethylene bag, rubberized animal hair pieces molded to the contour of

Top pad, like bottom pad, is molded to the contour of item being packaged. Rubber gasket, closing ring, then cover, go into place to complete package. New packaging received a variety of federal testing prior to acceptance, including submersion, pressure and drop tests.

He uses a torque wrench in order to eliminate the pressure to the nut or ring, to avoid pulling the nut off by excessive pressure. . There is a torque of eight and a half pounds on the bolt. Holding to this figure assures gasket and bolt will not break.

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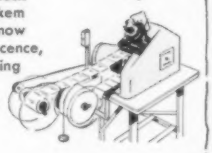
printing variables on bakery labels

... demanded tremendous variety in imprints, rapid changing to meet demand, price, ingredient changes. Imprinting variables on roll stock labels with a Markem 88A machine has now eliminated obsolescence, shortages, purchasing headaches — resulted in sizable total dollar savings.



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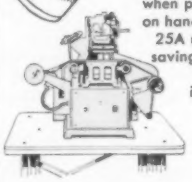
... with pre-printed pressure-sensitive tape purchased outside forced manufacturer to carry several types with various printings, delay shipment when proper kind was not on hand. Using a Markem 25A machine, he reports savings of at least 75%, no delays or inventory problems.



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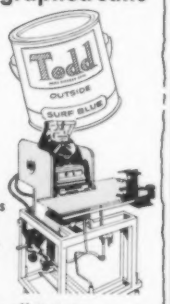

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the product, Grade A paper for the wrapping of certain shafts. A rubber gasket for getting a tight seal (after the top of the container is closed) is also used.

On-The-Line Operations

Our packaging line procedure is that the item first goes into the polyethylene bag to keep the unit free of dust and desiccant. Only one item or drive goes into each container. On certain items it is necessary to wrap the shaft in paper prior to packaging — in order to get a tight fit and protection for the item.

A crew member next inserts the bottom hair pad, then puts in the unit being packaged. After that, the top hair pad goes into place. Before closing the container, the envelope containing a test sheet and similar data is put on top of the top pad.

In closing one of these containers, he first positions the rubber gasket, after which he puts the closing ring into the position before placing the cover or top on the container. Crew members develop a knack for getting the closure on properly. Sometimes a slight amount of hammering is necessary in order that the ring may be closed tightly for bolting.

A torque of eight and one-half pounds is maintained on the bolt. We hold to the figure in order to avoid breaking either the gasket or bolt. The crew member uses a torque wrench in order to eliminate the pressure to the ring or not to avoid pulling off the nut by excessive pressure. Federal specification 6053 covers some of these details.

There are various sizes of containers to accommodate the different models or items we package. We utilize one container for several items through the use of different molded insert pads. Basically, our package is a 30-gallon container cut down to the size (i.e., the desired height) we need.

Package Testing

After developing our package, we tested it extensively in accord with military test requirements and secured governmental approval several months ago. The essence of such testing is that a container is pressured to five pounds per square inch and the top and bottom sections are submerged alternately. Also, a package is dropped 30 inches in accord with Mil-P-116, paragraph 4.3.2.3.6.-3. Our test results indicated that the bottom chime of the container is suitable for stacking. We passed the federal tests.

Underlying our efforts was our desire to replace the old Method II A which was expensive and time consuming. We wanted to go to a metal container in order to get away from a wood box. We considered a suspended can, but that involved as much time and expense as a wood box — and the package cost was higher. Then we tried rubberized animal hair and came to the present method. We were given a temporary governmental approval immediately — before securing final approval, which we eventually got.

Among the advantages we are getting with our new package are reductions of material, man-hours, and floor space used. We find our packages furnish a reliable safeguard against moisture, fungus and shock. They permit definite storage with special precautions. They are easier to handle and store than the packages they replace. A typical specimen of our current package is a Mil-C-6054 special container 22½ by 22 inches of 16-gage metal. The rubber gasket meets the requirements of Mil-R-3065. Our molded hair parts comply with Mil-C-7769.

Our new package weighs 135 pounds, compared to 138 for the old. It has 5.58 cubic feet, in contrast to 8.25 cubic feet, the volume of the old package. It costs $25.82, as against $34.00 for the old package. These comparisons involve the old and new packages for the same aircraft component. Our experience in working out this package and in securing federal approval indicates that a government specification is not inviolable! As soon as we showed the government the effectiveness of our package and indicated the test findings, we found the federal authorities cooperative and willing in the making of this change. The Air Force has been very instrumental in helping change from a wooden box to a metal container.

NOW *even more efficient!*

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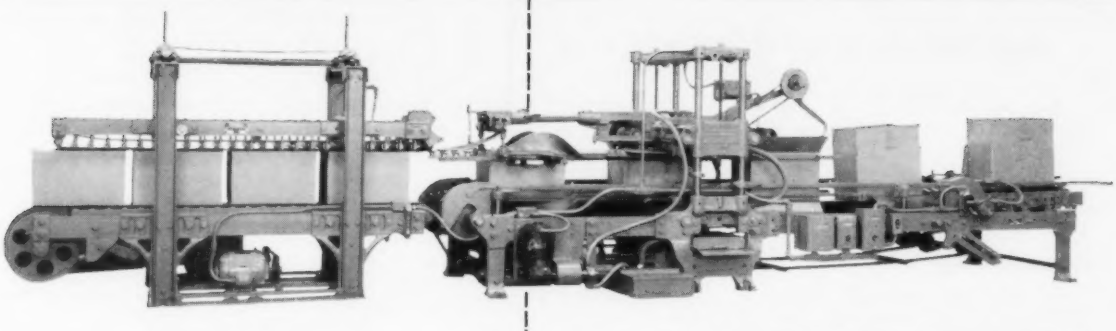

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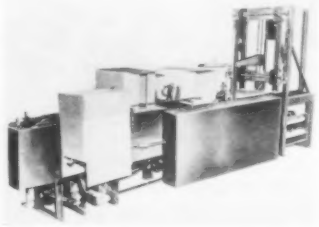
Case Opener And Positioner

A-B-C Packaging Machinery Corp. announces a new automatic case opener and positioner. Cases go into



a magazine from which they are stripped through an adjustable escapement. This permits adjustment for different thicknesses. Suction cups open cases and place them in between adjustable pockets where they are squared and the lower flaps automatically folded. A-B-C says that the unit is adjustabie for a wide range of case sizes, does not employ reciprocating motion, and handles up to 25 cases a minute. Circle No. 1.

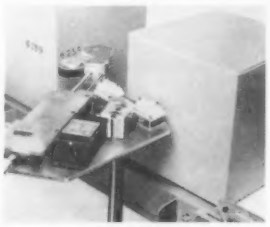
Semi-Automatic Packaging Unit

Topper Packaging Co. announces its model 602 semi-automatic plastic film packages. It features automatic bag

pick-up, loading, and sealing. It handles plastic bags from four by four inches to 14 by 14 by four inches. According to Topper the machine is designed for quick change-over to handle a variety of shapes and sizes of products—ranging from card-mounted hardware items to soft goods or food products. Circle No. 2.

Marking Attachment

Adolph Gottscho, Inc. has a new twin action air-operated conveyor line marking attachment to imprint a



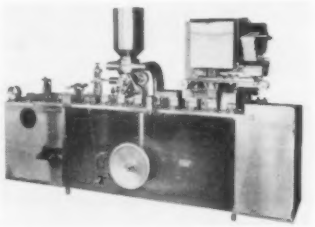
code-date on both the side and rear of shipping cases. This unit, its Rolacoder Model 202, uses interchangeable rubber type, and will accommodate codes and mark consisting of up to eleven letters or figures. There is an extra large reservoir for the fountain ink roller. Gottscho says the unit will fit between compression belts of a case sealer to imprint cases only three inches deep. Circle No. 3.

Polyethylene Molding Resin

Spencer Chemical Co. announces a new high density polyethylene molding resin with densities ranging from .935 to .940. Calling its new product, Poly-Eth-Hi-D, Spencer says that it has higher heat resistance, making possible its use in containers subject to high temperature. It has a tensile strength of 2300 p.s.i., a 400 per cent elongation, and stiffness of 35,000 psi. at 73 degrees F, according to Spencer. It is currently available as a melt index one, natural molding grade. Circle No. 4.

Packaging Machinery

Marathon Corp. announces availability of a machine that automatically packages three- and eight-ounce units of such a product as hot pack creamed cheese, in printed foil wrappers. A special feature of the machine is its



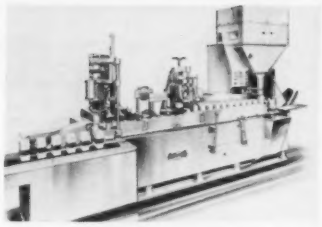
use of removable plastic molds. These are automatically lined with foil wrappers. An electric eye device insures that no product will be poured into the molds if no wrapper is present, according to Marathon. An adjustable mechanism permits unit weight control while the machine is in operation . It operates at speeds up to 53 three-ounce or 35 eight-ounce units a minute. The machine has a new method of supply foil wrappers to the cutting mechanism without cutting tension, the producer notes. Circle No. 5.

Bottling Crown

Continental Can Co. announces its custom crown which has a shorter metal skirt and thinner cork disc liner than the standard size bottle crown. Continental says that the new liner has the sealing efficiency of the standard cork liner. Both liners are of the same grade but changes in processing have been made in manufacturing the thin liner. The producer also notes that the new crown has the same sealing and carbonation retention qualities of the larger crown. Circle No. 6.

Automatic Filler

Arenco Machine Co., Inc. announces a new filling machine for such products as flour, sugar, chemicals and granulated items. It handles square bottom self-opening paper bags from one- to five-pound capacities. Arenco



says that the machine output is 1200 to 1900 bags an hour, depending on bag size and the number of weighers installed. Each filled bag has a paper-strip sealed triple-fold closure. Circle No. 7.

Automatic Stapler

Container Stapling Corp. announces its model CSC-1, a machine that staples tops or bottoms of corrugated

and solid fibre boxes of any style after they have been packed. The air-operated stapling head has fully pneumatic controls, and operates with a supply of compressed air at a minimum of 60 p.s.i. The producer says that all wearing surfaces of heads are hard chrome steel plated. This machine maybe also used to set up box blanks, using the carton stop member as a post. Circle No. 8.

Bag Sealer

Peters Machinery Co. announces a bag sealer and header applying machine that handles up to 70 bags a

minute. It receives filled bags from a conveyor, times each into the machine, tucks the gusset, applies the header or label and heat seals both bags and labels. Peters says that the unit handles plain or thermoplastic coated labels and is adjustable for a wide range of bag sizes. Circle No. 9.

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Available in Compound or Spray—for quick, efficient application to all types of packaging and labeling equipment. *Compound*—2 and 8 oz. tubes; 10 lb. cans. *Spray*—12 oz. aerosol bombs.

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For more information circle No. 214 on Reader Service Card

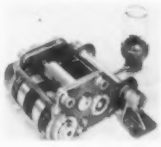
Pressure Sensitive Label Dispenser

Archer Label Co. announces its Multimatic Model 5, an automatic dispenser for pressure-sensitive labels.

Archer says the machine will dispense multiple rows, and that multiple width roll as wide as five and three-quarter inches will contain from 1,000 to 10,000 labels. As many as eight or ten labels may be dispensed at once. When turned on the machine dispenses a single roll of labels, then stops. When the last exposed label is removed, the machine turns itself on, dispenses another row and turns itself off again. Circle No. 10.

Package Imprinter

American Marking Corp. announces its double frame Micro-Printer, a unit that automatically imprints on tapes,



cellophanes, plastics and cartons. The unit follows aniline press principles and uses a no-mix liquid ink that dries instantly after making an impression, according to the producer. It is available in models allowing impression surfaces from eleven to 18 inches. Circle No. 11.

Can Cartoning Machine

Atlanta Paper Co. announces availability of its Cluster-Pak Automatic Midget. A machine for multi-unit

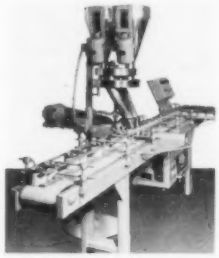
cartoning of canned food and grocery products. One model of this machine is a single file unit adjustable to pack can and multiples from two to six units per carton. Another model wraps cans in double file from four to twelve units. The producer says that the machine's average running speed is 40 cartons a minute. One person operates it. Circle No. 12.

Rigid Vinyl Sheet

Bakelite Co. announces a new rigid vinyl calendered sheet for food packaging which will be used in direct contact with red meats, poultry and sea food. Bakelite says the new material may be vacuum formed into bowl, tray or contour following shapes and can be heat sealed. The producer says that it has a high degree of dimensional stability a low rate of water absorption and resistance to grease, oils and other chemicals. Circle No. 13.

Automatic Filler

Stuyvesant Engineering Co. announces a new automatic filling machine for dry and semi-dry products. It has a



double joined hopper so that it may fill two containers simultaneously. Vibratory action on each hopper is individually controlled so that the discharge of each mouth may be varied to provide uniform product weight. A conveyor carries the empties to an automatic stop under the hopper mouths where two containers fill simultaneously. The filled containers then automatically move to the end of the conveyor. Circle No. 14.

Re-Usable Shipping Containers

George D. Ellis & Sons, Inc. announces a line of re-usable shipping containers in non-standard body

heights. These are produced in diameters of five, six and one-half, and eight and one-half inches, and in body heights from three to 60 inches. Container tops are secured by a lock-ring bolt. Circle No. 15.

Molded Plastic Packaging

Ambassador Plastics & Manufacturing Corp. announces availability of packages molded of crush-resistant foam plastic. According to Ambassador, the material has insulating ability with a K factor of .218, a neutral pH, a controlled density of three to 15 pounds per cubic foot, and compressive strength of 5760 pounds per square foot. Circle No. 16.

FREE BOOKLET

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● New, helpful booklet shows why Lusteroid plastic vials and tubes are the economical and practical answer to your small item packaging and merchandising problems. Shows how Lusteroid's unique qualities provides complete protection for small items—eliminates the need for protective packing and partitioning—saves money in handling, packing and shipping. Illustrates how Lusteroid provides visible sales appeal for your product—permits free inspection—and turns shoppers into customers. Shows how Lusteroid eliminates labeling costs—cuts leakage and spoilage costs because of its unique "one-piece" construction—provides length flexibility at no extra charge. See how other products are packaged for safety, savings and sales in Lusteroid's low-cost plastic vials and tubes.

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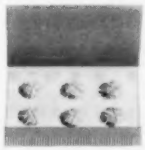

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Interior Packaging

Kimberly-Clark Corp. has a ten-page booklet illustrating and describing the use of its Kimpak in military packaging. Illustrations include actual military items being packaged with this material. Included also are recommendations in regard to meeting specifically enumerated governmental specifications. Circle No. 101.

Speed Control Systems

Graham Transmissions Inc. has a new bulletin entitled, "Automated Speed Control." It shows a number of examples of automatic speed control, including constant tension, constant velocity winding and feeding, and automatic load control. It describes a new air control system for fractional horse power variable speed drives. Circle No. 102.

Packaging Techniques

The Kord-Mar Co., Inc. announces a new booklet describing its cutter and crimper equipment which converts corrugated board into wrapping and packing materials. Illustrations show the uses of pre-cut and crimped material. Machines, specifications and packaging room details are included. Circle No. 103.

Electric Brakes, Clutches

Warner Electric Brake & Clutch Co. has an eight-page bulletin describing its electric brakes and clutches. Detailed specifications are enumerated. Line drawings and half-tones illustrate the explanatory text. Circle No. 104.

Filling Machinery

Hope Machine Co. offers a 16-page catalog of its filling machines. Drawings, specifications and descriptive explanations of principal units are included. The booklet also has a list of users whose products are filled with this equipment. Machine features are explained. Circle No. 105.

Aerosol Fillers

The Mojonnier Dawson Co. has a folder on its Electromatic fillers for low pressure aerosols. Details of the various models and their distinguishing features are included. Comparison charts showing three ranges of filling accuracy are included along with other machinery data. The folder also has descriptive material covering other Mojonnier Dawson fillers. Circle No. 106.

Box Loading Method

Hinde & Dauch has a 16-page booklet on the stacking and loading of corrugated boxes. It enumerates nine rules for stacking and loading, and includes explanatory text and illustrations of methods of estimating storage space, distributing load weights, handling, identification, and the use of gates, bulkheads, barricades, and weatherstripping. Circle No. 107.

Heat Sealing Equipment

Product Packaging Engineering has an illustrated leaflet describing its Comet 54 high-speed, semi-automatic heat sealer. Machine features and specifications are enumerated. Operating details are reviewed briefly. Circle No. 108.

Index Tables

Ferguson Machine and Tool Co. has a four-page folder describing its intermittor index tables for high-speed production. Line drawings illustrate equipment details and functioning. Operational features are reviewed. Circle No. 109.

Candy Filling Equipment

Frazier and Son has a three-page report describing its Whiz-Packer volumetric filler with horizontal feed. Halftones illustrate the machine and its change parts. Specifications and details are enumerated. Circle No. 110.

Web Conditioner

S. W. Speers Co., Inc. has a leaflet describing the Avisco web conditioner. Specifications are enumerated as well as product features. Line drawings illustrate the structural and functional details. Circle No. 111.

Coil Wrapping

Angier Corp. has a booklet describing its machinery and materials for spiral wrapping of coils of various products. Close-up illustrations reveal machine details, and product and material specifications are reviewed. Circle No. 112.

Polyethylene Coated Paper

Bakelite Co. has a 30-page booklet containing technical data about polyethylene for paper coatings. Graphs, line drawings and halftones accompany the explanatory text describing such subjects as polyethylene resins, designations, permeability, manufacturing of polyethylene-coated papers and applications of these papers. Numerous tabular presentations are included. Circle No. 113.

Fillers For Petroleum Products

Horix Manufacturing Co. has a four-page folder reviewing details of its fillers for petroleum products. Included is a line drawing and description of the gravity principle of fill. Halftones of machine installations accompany the descriptive text. Circle No. 114.

Bags, Liners And Wraps

Chase Bag Co. has a 15-page catalog illustrating and describing its line of products including multiwall paper bags, open mesh, cotton, burlap and other paper bags as well as a variety of special packaging and production materials. A description of plant facilities is included. Suggested product applications accompany the descriptive text of each item listed. Circle No. 115.

Flexible Packaging

Dobeckmun Co. announces a product report on Durafilm 3C-30P, a combination of reverse-printed 300 MSAT cellophane and a two-mil polyethylene heat seal coating extruded on the printed side. Details of its use and

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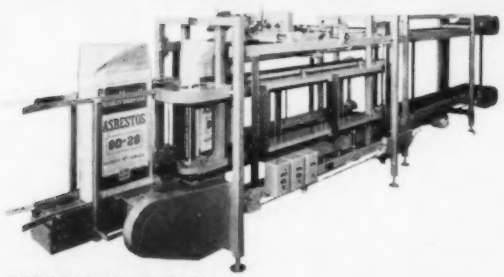
Better packaging means lower production costs and increased volume.

From Quaker Oats Company plants, ten 5-lb. bags of Aunt Jemima flour are shipped to grocers' shelves in paper shipping bales. New Packomatic Bale Sealers automatically fold, glue, position flaps and seal the tough bales securely.

Manufacturers of virtually every bulk or pre-packaged product should consider the safety and economy of the bale for shipping, and the Packomatic Bale Sealer for automatic sealing. Customized to your needs, of course.

But, whatever your package, whatever your budget, there's a particular Packomatic machine for complete automation or for "speed up" of any single operation.

Let a Packomatic representative review your present packaging methods.



WRITE FOR FOLDER 3A-11

Other PACKOMATIC machines include the Bale Sealer — Case Sealers — Opener-Loaders — Case Imprinters — Telescoping Volumetric Filler — Packer-Gluers. Units available, semi-automatic or fully-automatic depending on your needs.

PACKOMATIC FULLY AUTOMATIC BALE SEALER

Packomatic Bale Sealers, originally designed to handle, glue and seal paper shipping bales up to 100 lbs. weight, can be customized by our engineers for a combination of weights and sizes within these dimensions:

RANGE: *Length:* 9″ to 18″ in 6″ increments
Width: 5″ to 9½″ in 2″ increments
Height: 14″ to 40″ in 6″ increments

SPEED: The regular Bale Sealer is designed for speeds up to 1000 bales per hour.

CONSTRUCTION: This machine is a heavy-duty machine featuring sturdy, square tubular framework, heavy-duty chains, oversize bearings, heavy-duty reduction units and positive safety stop devices.

Over 50 years' experience in Customized Packaging Equipment

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application for sea food are included as well as package specifications. Circle No. 116.

Shock, Vibration Recording

The Impact-O-Graph Corp. has a four-page illustrated folder on its impact, acceleration and gravity recorders. An explanation of shock recording accompanies an enumeration of specifications and features as well as suggested applications. Circle No. 117.

Rotary Heat Sealers

Doughboy Industries, Inc. offers an illustrated folder on its heavy duty rotary sealer for cellophane, glassine, moisture barrier materials, foils, coated papers and the like. Halftones and line drawings illustrate sealing details, equipment features and types of bag top folders. Specifications and machine features are set forth. Circle No. 118.

Check Weighing Equipment

Bartelt Engineering Co. has a four-page folder explaining its checkweigher and reviewing its operating details. Machine specifications are included, as well as pertinent halftones. Circle No. 119.

Draw Press Equipment

Taber Instrument Corp. announces Bulletin 5603 covering its Model 146 thermatic draw press for drawing and trimming round and oval covers from thermoplastic sheet material. Halftones and machine specifications accompany the descriptive text. Circle No. 120.

Wrapper For Meats

Wrap-King Corp. has a leaflet describing its Model M. wrapper for sliced luncheon meats, cold cuts and the like. Machine features and specifications are enumerated and its operating sequence is illustrated. Circle No. 121.

Packer-Gluer

J. L. Ferguson Co. has a four-page folder illustrating and describing its packer-gluer, a new short case sealer that applies glue in spot patterns for fast drying. Halftones and line drawings accompany the text and specifications. Details of dimensions are set forth. Circle No. 122.

Automatic Capping

Consolidated Packaging Machinery Corp. has a six-page bulletin illustrating and describing eight different models of automatic capping equipment. Halftones of actual installations and a list of users accompanies the descriptive text and general machine specifications. Circle No. 123.

Auger Filling Equipment

Stokes & Smith Co. has a four-page bulletin describing its EG-1 universal auger filler. Drawings illustrate the various types of machine operation accompanying the halftones and descriptive information. Package limits for each filling method are enumerated. Circle No. 124.

Labeling Machinery

Economic Machinery Co. offers Bulletin BL-255 describing the operating and production features as well as the machinery details of its Bee-Line labelers. Illustrations and specifications are included. Circle No. 125.

Pneumatic Heat Sealing

Wrap-Ade Machine Co., Inc. has a leaflet describing its pneumatic heat sealer. Included are illustrations, chart of line pressure and jaw pressure, as well as machine operating details. Circle No. 126.

Labeling Machinery

Standard-Knapp Div. Emhart Manufacturing Co. has a four-page brochure on its labelers for cans, bottles, jars, and pails. Halftones and line drawings illustrate equipment functioning. Specifications and machine details are included. Circle No. 127.

Bag Closing Machinery

Shellmar-Betner Flexible Packaging Div. of Continental Can Co. has a four-page folder on its Benco bag closing machine. Machine details are included. A sequence of halftones reveals details of equipment function-

Route Your Product

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THE PACKAGING LINE

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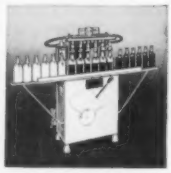
BRAND NAMES TRAVEL

The famous brands that travel the U. S. Packaging line represent all types of liquid products, such as pharmaceuticals, wines, liquors, foodstuffs, condiments, household chemicals, waxes, detergents, etc. U. S. Rotary Vacuum Fillers handle practically any type of container finish.

For liquid filling that must be fast, economical and above all, *dependable*, U. S. Rotary Vacuum Fillers add the important plus value of extremely long life. Repeated installations by top plant engineers will justify *your* considerations of this machine. Write for the "Rotary Filler Bulletin."

One of a series of basic models custom-built to user's specific requirements.



U. S. Model B-49 Straightline Vacuum Filler; the most automatic one-man filler. Available with or without discharge conveyor. For all liquids. Changeover for all types containers. Contact parts stainless steel, or plastics. Write for Bulletin B-49.

U. S. Model B-2 Semi-automatic Vacuum Filler. Provides efficient continuous production, filling two containers at a time. Automatic product supply for all containers up to 4½" dia. All liquids and semi-liquids. Portable. Write for Bulletin B-2.

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MONTREAL • TORONTO • VANCOUVER • WINNIPEG • TOLEDO (export).

ing. Bag requirements are listed. Circle No. 128.

Rigid Plastic Packages

Dow Chemical Co. has a 44-page catalog describing and illustrating some 160 rigid plastic packages available. Name and address of the molder, dimensions, colors, and suggested uses accompany each illustration. Circle No. 129.

Sealing Machinery

Aluminum Co. of America has a four-page folder on its type AK sealing machine. Operating details are described and machine specifications are enumerated. Circle No. 130.

Case Sealing Equipment

Schroeder Machines Corp. has a leaflet on its Model 353 case sealer. Operating features, structural details and machine specifications are included. Circle No. 131.

Dry Glue Carton Former

Package Machinery Co. leaflet describes this company's new Traymaster carton former. Made in two models, this machine forms cartons from flat blanks using dry, rope-like, thermoplastic adhesive fed from spool. It can glue polyethylene-coated board. Circle No. 132.

Polystyrene For Vacuum Forming

Dow Chemical Co. offers a comprehensive technical bulletin on Styron 475 sheet, a high-impact polystyrene suited to vacuum-formed packages. This booklet describes the sheet's characteristics and the methods of handling it. Fabrication machines are discussed and a list of equipment suppliers is included. Circle No. 133.

Electric Taping Machine

Nashua Corp. brochure sets forth features of the National "88" Electric Dual Length Tayper. Designed for high-speed tape sealing of uniform runs of boxes, this unit can be preset to deliver two separate tape lengths from six to 70 inches. It handles paper, cloth and fibre reinforced tapes in one to four-inch widths. Circle No. 134.

Package Imprinting Machinery

American Marking Corp. offers an illustrated brochure covering its line of automatic imprinting machines. Halftones and line drawings illustrate machine details. Specifications are set forth. Circle No. 135.

Label Gluer

King Sales and Engineering Co. offers a two-page bulletin on its Model F6 label gluer. Line drawings illustrate machine details and halftones show in-plant usage, and detailed specifications are listed—for motor- and hand-driven units. Circle No. 136.

Humi-Sorb...the leading packaging desiccant

There are three big reasons why packaging experts and purchasing agents from coast to coast depend upon HUMI-SORB for consistently reliable protection of packaged products which must be kept moisture free . . .

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SIPMHE announces exposition, competition, short course

The Society of Industrial Packaging and Materials Handling Engineers will hold its Eleventh Annual Protective Packaging and Materials Handling Exposition and Competition, October 22-25 in Kiel Auditorium, St. Louis. At the same time the group will hold its annual short course — under the direction of Stephen W. Vasquez, dean of the school of commerce and finance, St. Louis University. All short course sessions will be held in Kiel Auditorium during the mornings and the exposition will be opened during the afternoons — in the same building.

The short course will feature 24 sessions which includes a meeting of the Aircraft Industry Association preservation and packaging committee, as well as time devoted to Committee D-10 of the American Society for Testing Materials. In contrast to last year's highly technical short course content, this year's course will feature sessions of general as well as technical interest.

During the eight sessions devoted to protective packaging, attention will focus on new developments in plastics with special emphasis on types of functional plastic sheets and filaments and their uses and applications. Other packaging sessions will cover unit containers, bulk containers, protective papers and cushioning and shipping container closures.

A unique feature of the course will be four sessions devoted to human relations in industry. These sessions will consider the employee as an individual, management as an individual and general and specific problems of human relations in industry. Labor management relations and training programs to develop executives will also receive attention.

Other sessions of the short course will include eight sessions on materials handling — focusing on palletization, improving equipment and method and space utilization. Another distinctive feature of the course will be a session devoted to salesmanship in protective packaging and materials handling supplies and equipment — with special emphasis on training for executive sales positions.

Underlying objective of this year's short course is to provide material applicable not only to specialists in protective packaging and materials handling, but also to top and middle management personnel purchasing men and those concerned with plant development and planning.

Session Schedule

The following outline represents the basic arrangement of the short course sessions:

Monday, October 22nd:

Session I, plastics packaging; Session II, protective papers review; Session III, materials handling — palletization; Session IV, improved materials handling equipment and methods; Session V, human relations in industry, and Session VI, a special project.

Tuesday, October 23rd:

Session I, plastics packaging, application, methods and equipment; Session II, protective cushioning; Session III, space utilization; Session IV, equipment justification and purchase; Session V, labor and management, and Session VI, meeting of the Aircraft Industry Association preservation and packaging committee.

Wednesday, October 24th:

Session I, unit containers — folding cartons, fibre cans, etc.; Session II, bulk containers, and Session III, plant layout; Session IV, preventive maintenance; Session V, sales and the salesman, and Session VI meeting of the Aircraft Industry Association preservation and packaging committee.

Thursday, October 25th:

Session I, unit containers — application, methods and equipment; Session II, shipping container closures; Session III, economics; Session IV, transportation and warehousing review; Session V, training — executive development programs, and Session VI, SIPHME — training and education activities.

Quality control — when, where, and how

(Continued from Page 10)

neering department? No! It should report to the executive vice-president or president. Why? Let's take a quick look:

Production personnel think mainly of getting the job done — produce, produce and produce. Quality is not uppermost in their minds. They have a tendency to let things slide above or below established limits. "Oh, we can get by with that", so they say, and therefore would have the final say over the quality control man who has found non-conforming material.

The chief chemist and analytical laboratory is only a small segment of the quality problem, and may not have the over-all perspective. Oftener the reverse. The analytical laboratory and chief chemist should be integral parts of the quality control program.

The engineer quite often sets the standards. They could be too tight or too loose. They feel that, engineeringly, the job or machine should work. Yet many times the quality control man, by small samples and analysis of data, proves conditions otherwise. One who establishes the principles should not be in a position to approve his own work, by having a subordinate do the inspection. Coercion can lead to trouble.

The president or executive vice-president wants to see at a glance what is going on. A graph of his rejects on the production line or the total number of rejects tells him quickly *where he is going*. The vendors' materials; are they satisfactory? Who is the best performer, time after time?

The quality control department should be the super watch-dog, free

to move from operation to operation: To study, analyze and report. It should be a valuable aid to the president, and should help make the right decisions at the right time.

Last, but not least in the quality control program, is you, Mr. Top Executive. You are a very important cog in the wheel of quality control. Unless you back your program 100 per cent, it will fail. Along with you, the production and purchasing personnel must be sold and then trained on the merits of quality control as it is applicable to their departments.

One of the main reasons quality control fails is due to its pointing out and spotting trouble. Yet, the foreman on the job for many years is so set in his ways that he can't stand change, criticism or suggestion — or blames his trouble on incoming material. Facts, figures and graphs point to troubles and trends which may be known, but are sometimes covered up. Are we so close to the forest, we can't see the trees?

In conclusion, we might summarize with these few statements:

1. Start your quality control program now. Don't procrastinate.

2. Let's get some specifications written for in-coming material, and in-process handling. At the start, make them tentative, and as you study the process, make your changes, and then a final specification.

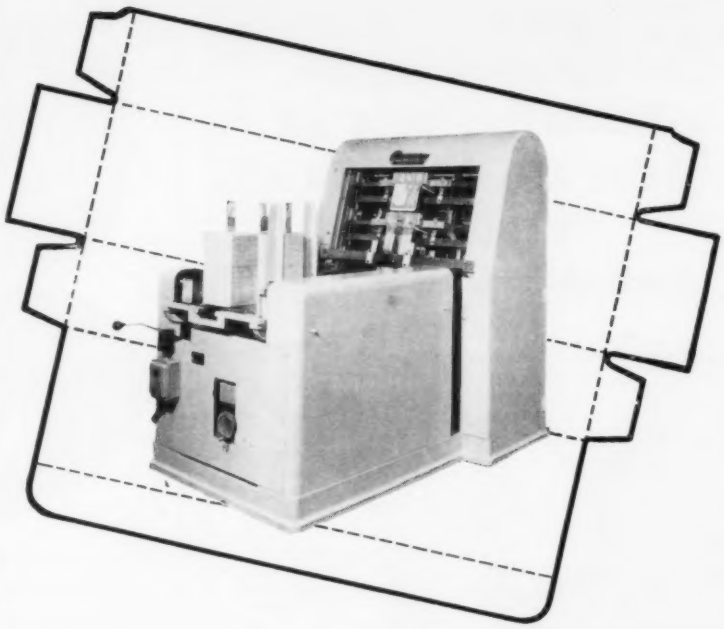
3. Make your inspection before and during production — not on the end product. Spot-check the final product! Catch the trouble before it starts!

4. Study one step at a time: Start at only one or two places. Learn to swim — then go for deeper water.

5. Give your quality control personnel authority — power to act, both on in-coming inspection and on-the-line inspection.

6. Back your quality control department and give it a fair chance.

References: (1) Specifications and Quality Control, Glass Packer, April, 1956; (2) Industrial Specification: E. H. MacNiece, John Wiley & Sons, Inc., New York, and (3) Sampling Inspection Tables, by Dodge and Romig, John Wiley & Sons, Inc., New York.



Peters Model SG Carton and Tray Forming and Gluing Machine

produces cartons and trays at speeds up to 175 per minute

At cost-cutting high speeds, the fully-automatic Model SG converts low cost blanks into perfectly shaped glued cartons and trays for packaging many products . . . cookies, crackers, confections, frozen foods, cigarettes, fruits, vegetables and others.

closes up to 150 cartons per minute.

Investigate Peters Model CCY Carton Folding and Closing Machine . . . it automatically folds and tucks carton tops to securely close up to 150 cartons per minute.

Write for your copy of the colorful new catalog describing these and other Peters machines for better packaging at higher speeds.

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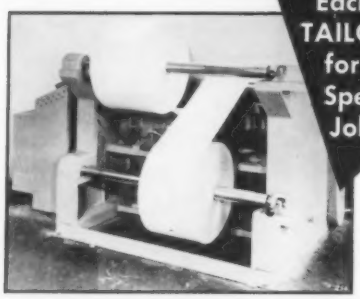
Each TAILOR-MADE for a Specific Job



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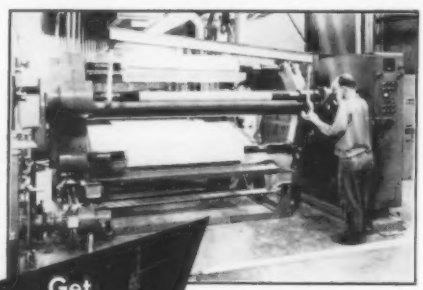
Winder & Slitter



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Triple-Shaft Winder
used by large
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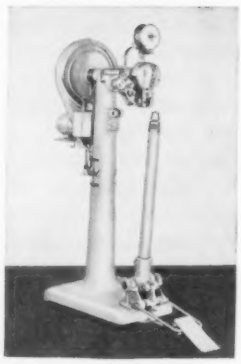
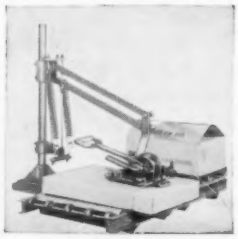
MID-STATES STITCHING WIRE on fibre throw-away spools gives you frictionless, uniformly smooth flow — off the coil and through the stitching head—to assure high speed, uninterrupted operation. *Available in 5, 10, 25, 50 lb. spools. All Standard gauges. Special gauges on request. Galvanized and copper-coated finishes.*



MID-STATES BOTTOM STITCHER MACHINE staples carton bottoms up to 72" wide, 40" deep. Effective on board stock to a maximum thickness of 3/8". Single foot pressure on saddle plate brings Bottomer Post into position. The famous "Tip-Toe" contact on electric switch starts and stops stapling. *Stapling Head Arms in 12, 30, 36 inches in length. Straight Arms and Sword Arm types also available.*



MID-STATES WIRE TYING MACHINES are your fastest, most economical means of assuring safe, intact shipments of products. Mid-States "T" model is the answer—it's simple, streamlined and fast! Moving handle forward and back tensions, ties, cuts wire in one easy operation. Mid-States supplies the wire to use with each machine.

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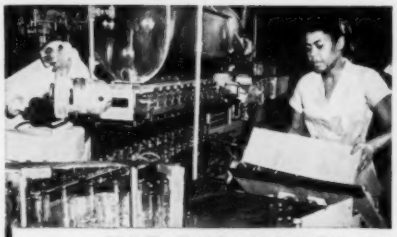
Index of Advertisers

American Viscose Corporation . . . . . Inside back cover
Bakelite Co. Div. Union Carbide and Carbon Corp. . . . 20-21
Battle Creek Packaging Machines, Inc. 29
Bronander Engineering & Research Corp. . . inside front cover
Arthur Colton Co. 23
Crossett Paper Mills 1
Culligan, Inc., Desiccant Div. 35
Dobeckmun Co. 5
Dow Corning Corp. 30
J. L. Ferguson Co. 33
The Filler Machine Co. 39
The Goodyear Tire & Rubber Co. 3
Hinde & Dauch 6
Hobbs Manufacturing Co. 38
R. A. Jones & Co., Inc. . . . . outside back cover
Lusteroid Container Company, Inc. 31
Markem Machine Company 26
Mid-States Steel & Wire Co. 38
Peters Machinery Co. 37
Riegel Paper Corp. 17
Scandia Manufacturing Co. . . . . inside front cover
Schooler Manufacturing Co. 30
Standard-Knapp Div. Emhart Mfg. Co. 27
U.S. Bottlers Machinery Co. 34
Wrap-Ade Machine Co., Inc. 31



A complete Filler Machine Co. line at Brook-Maid Co., Inc., Brooklyn including unscrambler, cleaner and straight line filler filling jams, jellies and preserves.

USE THE MODEL SL-55

To Fill Semi-Liquids, Semi-Solids

You'll get *more accurate filling*, *quicker cleaning*, *faster change over* when you use a Filler Model SL-55 piston type automatic filler!

- they handle from 2 oz. to quart and 2 lb. containers, fill food, dairy, paint and chemical products.
- positive accurate filling is assured every time because valves are air-free and pallets are air operated
- a "no container, no fill" feature saves the product from being wasted and keeps the machine clean
- you get faster, easier cleaning since the valve mechanism can be dismantled quickly
- all contact parts and parts around the filling zone are 18-8 stainless steel
- speed of fill is from 60 to 300 containers per minute, depending upon size of machine.

Get further details today on this model or our other models of filling machines and let us bid on your job.

The FILLER MACHINE CO., INC.
the original builder of Philadelphia piston fillers
12 Penn Avenue, Rockledge, Philadelphia 11, Penna.

For more information circle No. 223 on Card

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Our classified advertising section is intended for use by those wishing to buy or sell used packaging equipment, to employ packaging personnel, seek such employment, offer or seek business opportunities. It is not available for general advertising. Terms: Cash with order. Rates: Up to 60 words, $10.00. If boxed, $20.00. Up to 120 words, $20.00. If boxed, $40.00. Up to 180 words, $30.00. If boxed, $60.00.

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POSITION WANTED — VACUUM FORMING: Five years practical experience of all types using all kinds and gauges of sheet materials. Thoroughly familiar with vacuum forming in packaging, automobile manufacture, refrigerator and other fields. Specializing in development of new products, new applications, machine design, mold design and allied processes.

Address replies to Box 1002, Package Engineering, 1791 W. Howard St., Chicago 26, Illinois.

HELP WANTED

PACKAGING ENGINEER — Do you know someone with experience in field of package engineering, particularly one who has tested or evaluated shipping containers, metal, fiberboard, wooden boxes, cushioning material, preservatives, etc? Position open with government research laboratory in California that designs, develops and tests prototype containers for ordnance weapons. Applicants are invited to send outline of qualifications, personal background and educational summary.

Reply to Box 1001, PACKAGE ENGINEERING, 1791 W. Howard St., Chicago 26, Illinois.

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WANTED — POLYETHYLENE SCRAP

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BLEEDER

Erie Plastics Company
1059 Buffalo Road
Erie, Pennnsylvania

Announce Military-Industry Symposium October 9-11

The Second Joint Military-Industry Packaging and Materials Handling Symposium will be held October 9-11 in Washington. The Department of the Air Force, with the cooperation of the Departments of the Army, Navy and Commerce, and the National Security Industrial Association is sponsoring the program — to be held in the Departmental Auditorium on Constitution Avenue between 12th and 14th Streets North West. Speakers will include recognized specialists from the packaging industry as well as officers and civilian men associated with the military. Further information as well as programs and registration cards may be obtained from:

Containers and Packaging Division,
Business and Defense Services Administration,
U.S. Department of Commerce,
Washington 25, D.C.

or from:

Packaging and Materials Handling Division,
D/Transportation,
Office, Deputy Chief of Staff, Material,
Department of the Air Force,
Headquarters, United States Air Force,
Washington 25, D.C.

What we think

Far too few technical and operational packaging men are making adequate preparation for their own growth and advancement. This is unfortunate, because two challenging alternative courses are becoming increasingly clear: One is the expansion of the packaging function within a company. This will require men who are more than just packaging experts, however vital such qualifications are. The other is the probability of moving from the rank of a supervisor of specialists to that of general management, even top management.

Inevitably, packaging will have increasing representation at top management level. Likewise, the packaging organization within a company certainly will expand, thus introducing *organizational* as well as technical problems. Fortunately, there are now many means of developing a specialist into a general management man.

Just why the packaging man is not taking full advantage of these opportunities is not hard to explain. In many instances he simply is snowed under with work. In a few cases he is discouraged because packaging within the company framework stands rather far back in the shadow of sales, production, and other traditional functions. In other quarters he may be unaware of his opportunities. But in most cases he is aware, and needs only a measure of help and encouragement, the added push to start him on his way.

Among the organizations in the packaging field one deserves special attention in this regard because it focuses on the needs of the individual: The Society of Industrial Packaging and Materials Handling Engineers. It differs from other leading organizations in that it is a professional society—with membership and activities on an individual basis.

Of course, other groups (such as Packaging Institute and American Management Association) do a lot for the individual. PI's famed committee work brings him together with others to solve common packaging problems. AMA's conferences and seminars do much to give him a broad gauge viewpoint as well as to help him solve the pressing technical and operational problems of the day:

Most of SIPMHE's activities are well known: Its annual short courses, competitions and expositions require little explanation. Less well known, however, is the group's effort to prepare its members for their own advancement.

Sparkplugged by its dynamic president, John W. McReynolds of Kraft Foods Company, SIPMHE for some time has been encouraging and helping its chapters to put on programs designed to broaden and educate its members—to prepare them for management roles. Mr. McReynolds and other forward-thinking leaders of the group know that a seasoning of judgment and a broadening of viewpoint must accompany one's specialized professional competence if he is to assume management rank. They have consistently urged chapters to have speakers who contribute to the growth of the individual, exposing him to fresh thinking, focusing his attention on the broad aspects of management.

Unfortunately, even the best of programs cannot flower without funds. If SIPMHE is to serve the growth of packaging, it will have to have the increased support of industry. It needs (and should have) more sustaining members, among both users and suppliers of packaging. It now has ten sustaining members; it needs at least 35 more. We hope they are forthcoming.

Underlying this is the fact that if SIPMHE can finance its *normal* operations from dues, it can use funds such as its exposition proceeds for special projects. John McReynolds would like to use these proceeds to finance teams to visit remote places around the country to conduct seminars and other programs for the benefit of packaging men located in those areas, typically beyond easy access to the metropolitan centers where SIPMHE short courses and programs usually transpire.

Disregarding the help all this would mean in the solution of technical packaging problems, however important *per se*, we suggest that the inspiration and encouragement a group like SIPMHE can give an individual member may be just the spark he needs to induce him to take affirmative steps of self-development in preparation for advancement.

Going to school, studying the best of contemporary management literature, listening to significant speakers—all these involve sacrifices by the packaging man and his family. Often, choices are very definite: An evening at the theater versus a quiet session with the thought-provoking Harvard Business Review, or, a family picnic versus leaving home Sunday afternoon in order to reach an important industry conference the following morning.

Naturally, we do not advocate completely abandoning one's normal life in order to prepare for the climb up the management ladder. But we do say that those who let their long-range judgments govern most of these choices will reap the rewards—tangible and intangible. Many of those who will become the vice presidents in charge of packaging will be grateful for the help that SIPMHE gave them in encouraging them to take the first, hard steps of executive self-development. Likewise, many a board of directors, having to name a vice president for packaging, will come to appreciate SIPMHE's part in developing men qualified for the challenge and responsibilities of management.

Bruce Holmgren

Editor

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112	113	114	115	116	117	118	119	120	121	122
123	124	125	126	127	128	129	130	131	132	133
134	135	136								

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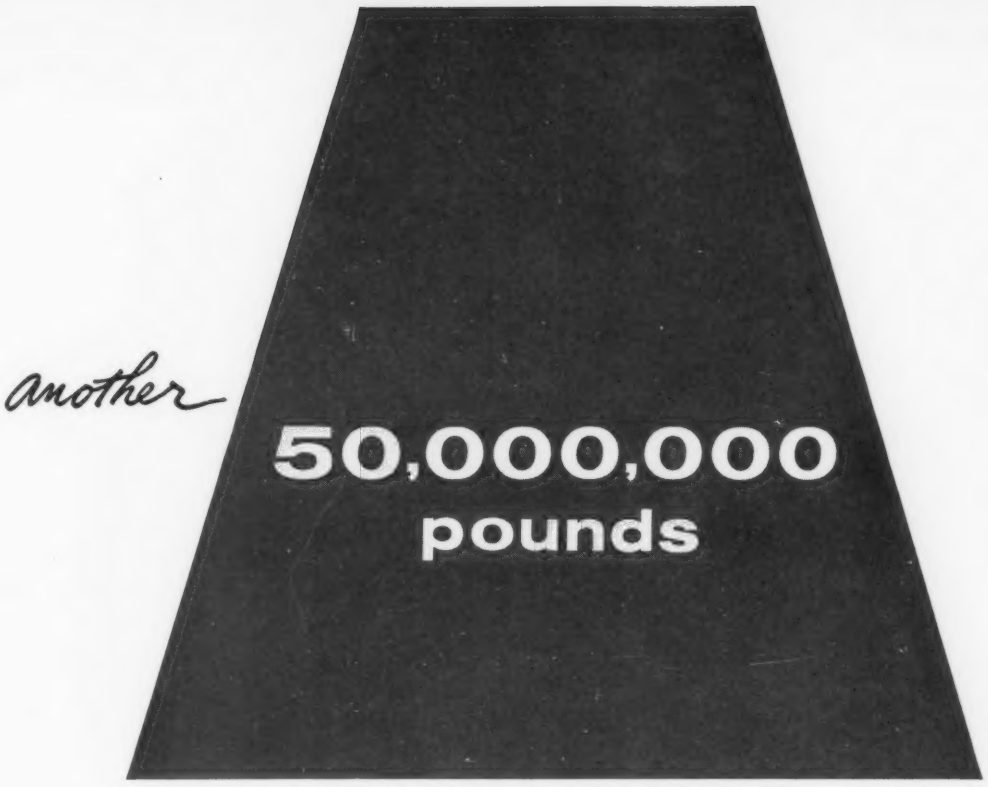


of AVISCO® cellophane

When the American Viscose Corporation opens its new cellophane plant late in 1957 at Marcus Hook, Pa., another 50,000,000 pounds of capacity will be added to its current cellophane output.

This additional poundage will serve to meet the steadily increasing preference for cellophane in self-service retailing and automatic packaging operations—a demand that far exceeds the most ambitious forecasts of a decade ago.

At American Viscose we've been acutely aware of growing marketing needs. We have already expanded our production during the past ten years to 100,000,000 pounds at our plant in Fredericksburg, Va.

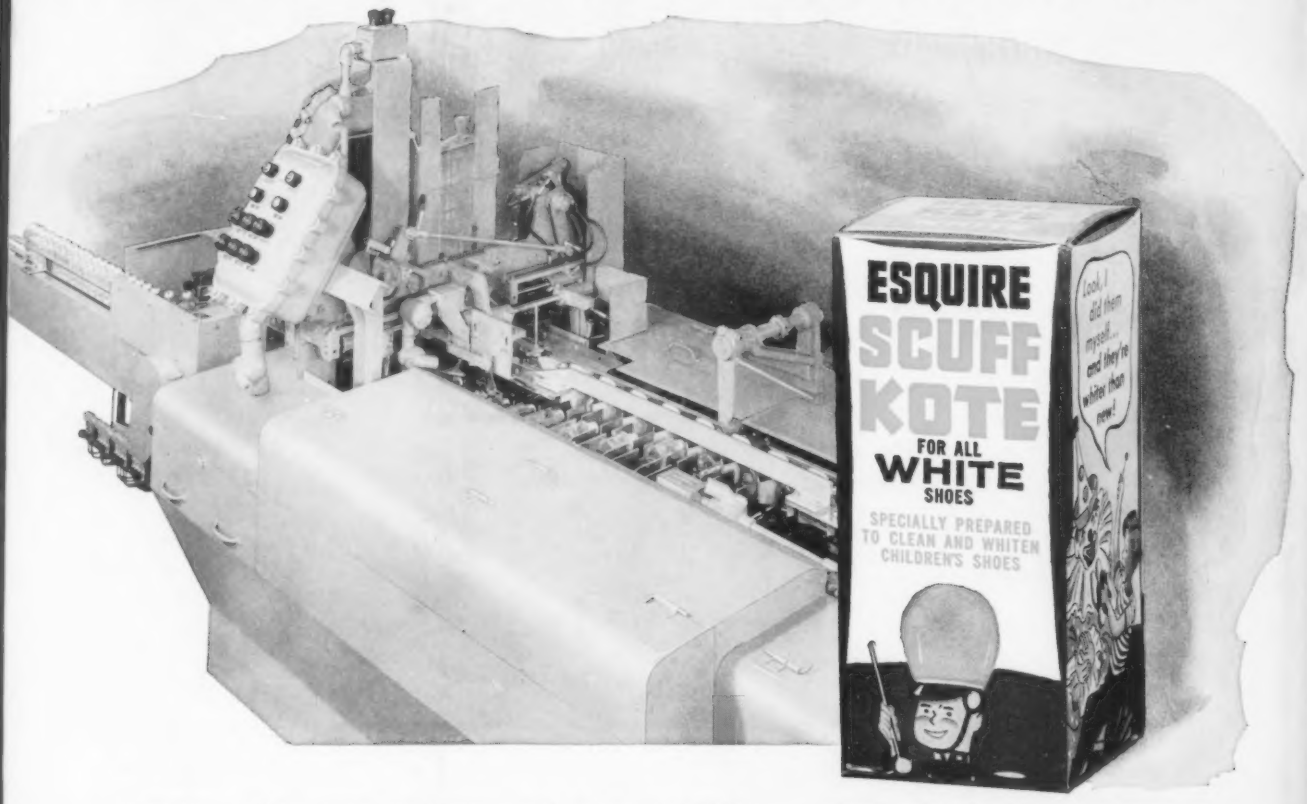
But the future promises an even greater demand for this versatile packaging material. We feel an obligation to anticipate this need.

The answer is more production. The additional cellophane from Marcus Hook, available in gradually increasing amounts, will be our contribution to a much more plentiful supply.

American Viscose Corporation
Film Division
1617 Pennsylvania Blvd.
Philadelphia 3, Pa.

AVISCO
CELLOPHANE

can you use 300 PER MINUTE?



R. A. Jones and Company, Inc., announces the new Jones CMC-300, designed for fully automatic cartoning at 300 cartons per minute. This machine answers modern industry's demand for high speed packaging with utmost dependability of performance.

The Knomark Manufacturing Company, Inc., Brooklyn, producer of famous Esquire shoe dressings, has achieved outstanding efficiency in manufacturing and packaging techniques. The addition of this machine raises the total to 6 Jones Cartoners handling Esquire polishes —4 CMCs and 2 CMVs.

300-PER-MINUTE SPEED MADE POSSIBLE BY:

1. **Vibration-free frame—redesigned to provide added rigidity and compactness.**
2. **Double-blade, short-stroke carton forming—to assure positive performance at highest speeds.**
3. **Redesigned power train—anti-friction bearings, flame hardened gears, split clamp-type hubs.**

The CMC-300, with these and many other refinements, is as effortless at 300 per minute as older models at 150 per minute. The CMC-300 also offers the same wide adaptability to various load and carton sizes that characterized preceding CMC models.

See 300-PER-MINUTE cartoning in operation at users' plants or on our own assembly floor. Write for data regarding the in-service performance and features of these machines.

R. A. JONES & COMPANY, INC.

Cartoning Machines — Soap Presses

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